

# IDEXX SNAPshot Dx\*

Analyzer

## Operator's Guide



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# Preface











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## Safety Precautions

- The IDEXX SNAPshot Dx\* Analyzer contains no user-serviceable components. DO NOT disassemble. Call IDEXX Technical Support for any service issues.
- Do not insert anything in the SNAP\* ports except devices approved for use with the SNAPshot Dx Analyzer.
- Do not insert anything in the incubator wells except for the plastic sample tubes provided in the SNAP test kits.
- DO NOT stack other equipment or containers on top of the analyzer.
- Keep analyzer away from sources of heat or flames.
- DO NOT place or operate the analyzer near x-ray equipment, photocopiers, or other devices that generate static or magnetic fields.
- PROTECT your equipment from damp conditions or wet weather.
- Take care not to spill water or other fluids on the analyzer.
- DO NOT use any of the following liquids, abrasives, or aerosol sprays on or near the analyzer, as they may damage the outer case and may influence the results:
  - Organic solvents
  - Ammonia-based cleaners
  - Ink markers
  - Sprays containing volatile liquids
  - Insecticides
  - Disinfectant
  - Polish
  - Room freshener
- Line voltage for the SNAPshot Dx Analyzer power supply is 100–240 V AC, 50–60 Hz. Be sure to plug all equipment into properly grounded electrical outlets.
- Use only the power cable supplied.
- Disconnect the power cable from the AC power outlet:
  - If the power cable becomes frayed or otherwise damaged.
  - If anything is spilled onto the equipment.
  - If your equipment is exposed to excessive moisture.
  - If your equipment is dropped or the case has been damaged.
  - If you suspect that your analyzer needs service or repair.
  - Whenever you clean the case.
- If the equipment is used in a manner other than specified, the protection provided by the equipment may be impaired.



## International Symbol Descriptions

International symbols are often used on packaging to provide a pictorial representation of particular information related to the product (such as expiration date, temperature limitations, batch code, etc.). IDEXX Laboratories has adopted the use of international symbols on our analyzers, product boxes, labels, inserts, and manuals in an effort to provide our users with easy-to-read information.

Symbol	Description	Symbol	Description
	<b>Use by</b> A utiliser avant Verwendbar bis Usare entro Usar antes de 使用期限		<b>Temperature limitation</b> Température limite Zulässiger Temperaturbereich Temperatura limite Limitación de temperatura 保存温度(下限)
	<b>Batch Code (Lot)</b> Code de lot (Lot) Chargenbezeichnung (Partie) Codice del lotto (partita) Código de lote (Lote) ロット番号		<b>Upper limit of temperature</b> Limite supérieure de température Temperaturobergrenze Limite superiore di temperatura Limite superior de temperatura 保存温度(上限)
	<b>Serial Number</b> Numéro de série Seriennummer Numero di serie Número de serie シリアル番号		<b>Consult instructions for use</b> Consulter la notice d'utilisation Gebrauchsanweisung beachten Consultare le istruzioni per l'uso Consultar las instrucciones de uso 取扱説明書をご参照ください。
	<b>Catalog Number</b> Numéro catalogue Bestellnummer Numero di catalogo Número de catálogo 製品番号		<b>Keep away from sunlight</b> Conserver à l'abri de la lumière Vor direkter Sonneneinstrahlung schützen Mantener alejado de la luz solar Tenere lontano dalla luce diretta del sole 遮光してください。
	<b>Authorized Representative in the European Community</b> Représentant agréé pour la C.E.E. Autorisierte EG-Vertretung Rappresentante autorizzato nella Comunità Europea Representante autorizado en la Comunidad Europea EC内の正規販売代理店		<b>WEEE Directive 2002/96/EC</b> Directive 2002/96/CE (DEEE) WEEE-Richtlinie 2002/96/EG Directiva 2002/96/CE RAEE Direttiva RAEE 2002/96/CE 廃電気電子機器指令 (WEEE Directive 2002/96/EC)

Symbol	Description	Symbol	Description
	<b>Manufacturer</b> Fabricant Hersteller Ditta produttrice Fabricante 製造元		<b>Biological Risks</b> Risques biologiques Biogefährlich Rischi biologici Riesgos biológicos 生物学的リスク
	<b>Caution, consult accompanying documents</b> Attention, consulter les documents joints Achtung, Begleitdokumente beachten Attenzione, consultare la documentazione allegata Precaución, consultar la documentación adjunta 注意、添付文書をご参照ください。		<b>Do Not Reuse</b> Usage unique Nicht wiederverwenden No reutilizar Non riutilizzare 再利用しないでください。

## Other Symbols

Symbol	Description	Symbol	Description
	USB symbol		Ethernet/network symbol

## Introduction

The IDEXX SNAPshot Dx\* Analyzer is an assay reader designed for use with certain IDEXX SNAP\* consumables, such as SNAP\* Total T<sub>4</sub> and SNAP\* 4Dx\* Plus Tests. By using the SNAPshot Dx Analyzer, you can keep a record of your patient's SNAP test history as well as add tests to an existing patient's record.

The analyzer's touch-screen interface provides easy-to-follow instructions to help you navigate the system, specify testing information, and more.

The SNAPshot Dx Analyzer is for veterinary use only.

### IDEXX VetLab\* Station Connectivity

The SNAPshot Dx Analyzer is part of the IDEXX VetLab\* suite of analyzers, all of which connect to the IDEXX VetLab Station (IDEXX's laboratory information management system). Connecting multiple analyzers to the IDEXX VetLab Station allows you to view a comprehensive picture of your patient's health, with the ability to view test results from multiple analyzers on a single report, determine disease progression with parameter-trending capabilities, and more.

By connecting the SNAPshot Dx Analyzer to the IDEXX VetLab Station, you can:

- Automatically review patients' prior results on every printout for easy comparison.
- Improve client communications with illustrated diagnostic or treatment progress printouts.
- Link to expert descriptions and common causes of abnormal values.
- Print information to help explain the significance of results to your clients.
- Allow new staff to train independently.
- View educational on-screen guides and videos, such as how to properly prepare a plasma sample.
- Learn proper protocols and tips for best techniques.

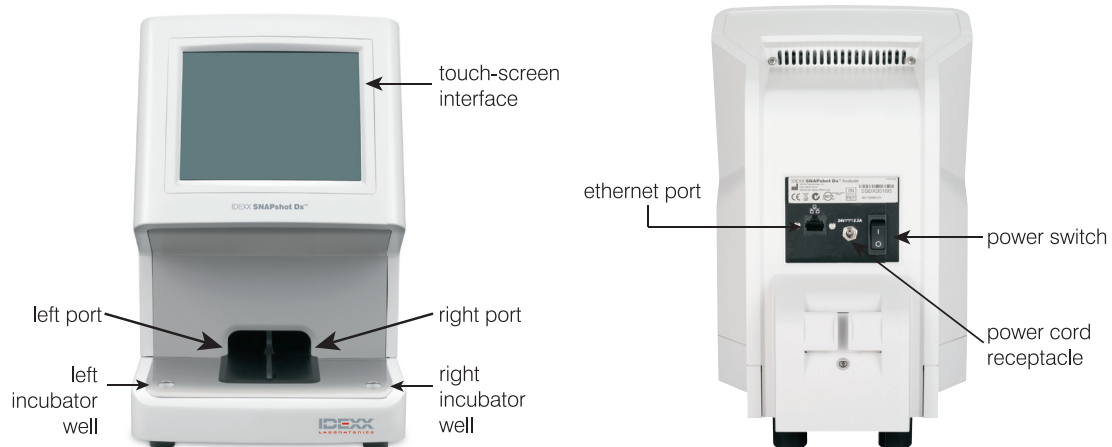
### How It Works

The SNAPshot Dx Analyzer is a digital imaging system that records and interprets the colorimetric response of enzymes immobilized on the surface of a SNAP test. During operation, the analyzer records digital images of each SNAP device and uses test-specific algorithms to calculate the results. All SNAP tests that are loaded into the SNAPshot Dx Analyzer must have a bar code on the top of the device so that the analyzer can confirm the SNAP test type.





## SNAPshot Dx Analyzer Components



## Installing the SNAPshot Dx Analyzer

The SNAPshot Dx Analyzer must be connected to the IDEXX VetLab Station (to be used in conjunction with the IDEXX VetLab suite of analyzers).

### To Install the SNAPshot Dx Analyzer

1. Before you unpack the analyzer, choose an optimum location for the analyzer. The analyzer should be placed on a level surface with at least 4 inches (10 cm) of clearance above the analyzer. The area underneath the analyzer should remain clean and clear. Choose a well-ventilated area away from obvious sources of heat, direct sunlight, cold, humidity, or vibrations. For optimum results, room temperature should be 19°C–27°C (66°F–81°F) and relative humidity should be 30%–85%.
2. Unpack the analyzer using the following steps:
  - a. Remove the analyzer, power supply, and Ethernet cable from the box and then from the bag.
  - b. Position the analyzer so the power switch can be accessed and the analyzer can be unplugged.
3. Connect the power cord using the following steps:
  - a. Plug the round power connector into the receptacle on the back of the analyzer.
  - b. Plug the power cord into a wall outlet or power strip.

**Note:** Do not power on the analyzer at this time.

### To Install the IDEXX VetLab Station Connectivity Router

**Note:** If you already have a network router connected directly to the IDEXX VetLab Station computer, you can skip this section and move to the “To Connect the SNAPshot Dx Analyzer to the IDEXX VetLab Station” section on page A-3.

1. Connect the AC power adapter to the power port on the back of the network router supplied by IDEXX Laboratories.
2. Plug the AC power adapter into an electrical outlet.
3. Connect one end of the Ethernet cable (provided with the router) into any available port on the router.

**IMPORTANT: Do not connect the IDEXX VetLab Station directly to the Internet port on the router.**

4. Connect the other end of the Ethernet cable (from step 3) into the IDEXX VetLab Station computer's Ethernet port, which is located near the center panel on the back of the computer.

**Note:** If this Ethernet port on the IDEXX VetLab Station computer is currently being used to connect the IDEXX VetStat\* Electrolyte and Blood Gas Analyzer (red Ethernet cable) to your IDEXX VetLab Station, disconnect the red Ethernet cable. Then complete step 4 above. The "To Reconnect the VetStat Analyzer" section, found at the bottom of this page, explains how to reconnect the VetStat analyzer after the router is installed.



Ethernet port on the back panel of the IDEXX VetLab Station computer's CPU

#### To Connect the SNAPshot Dx Analyzer to the IDEXX VetLab Station

1. Connect the Ethernet cable provided with the SNAPshot Dx Analyzer to the next available port on the back of the router.

**IMPORTANT: Do not connect the SNAPshot Dx Analyzer directly to the Internet port on the router.**

2. Connect the other end of the Ethernet cable (from Step 1) to the Ethernet port on the back of the SNAPshot Dx Analyzer.
3. Power on the IDEXX VetLab Station. Once the IDEXX VetLab Station is at its Home screen, power on the SNAPshot Dx Analyzer. Once both systems have completed their initialization process, the IDEXX VetLab Station will establish connectivity with the SNAPshot Dx Analyzer. When the SNAPshot Dx icon appears on the IDEXX VetLab Station Home screen, your connections are complete.

**Note:** If the SNAPshot Dx icon does not appear on the IDEXX VetLab Station Home screen within 3 minutes, contact IDEXX Technical Support for assistance.

#### To Reconnect the VetStat\* Analyzer

**IMPORTANT:** The direct connection between the VetStat analyzer and the IDEXX VetLab Station uses a standard Ethernet cable with a light purple cross-over adapter. **This light purple cross-over adapter, which is located on one end of the cable, must be removed before connecting the Ethernet cable to the router.**

1. Ensure the light purple cross-over adapter has been removed from the VetStat Ethernet cable.
2. Connect one end of the VetStat Ethernet cable to the VetStat analyzer and the other end to the next available port on the router.

**IMPORTANT: Do not connect the VetStat analyzer directly to the Internet port on the router.**

3. On the VetStat Home screen, tap **System Manager** and then tap **Setup**.
4. Use the alphanumeric keypad to enter the setup password, **207**, and tap **OK**.

5. From the Setup screen, tap **Hardware** and then tap the **Ethernet** tab.
6. Select **Dynamic** as the network setting and then tap **OK** to save the change.
7. Turn off the VetStat analyzer by toggling the power switch to OFF. Then, turn on the analyzer. After the VetStat analyzer returns to the Home screen, the VetStat icon will appear at the bottom of the IDEXX VetLab Station Home screen.

**Note:** If the VetStat icon does not appear on the IDEXX VetLab Station Home screen within 3 minutes, contact IDEXX Technical Support for assistance.

## Powering On the Analyzer

To turn on the analyzer, press the power switch on the back of the analyzer. The analyzer will take several minutes to warm up. It is ready for use when the Home screen appears.

## Shutting Down the Analyzer

To Shut Down the SNAPshot Dx Analyzer

1. Tap **Tools**.
2. Tap **Shutdown** and then tap **Yes** to confirm that you want to shut down the analyzer.
3. When the analyzer indicates it is okay to do so, press the power switch on the back of the analyzer to power the analyzer off.

**Important:** If you need to unplug the analyzer, ensure you disconnect the power cord from the wall outlet/power strip **BEFORE** you disconnect it from the analyzer.

## Connecting/Disconnecting the Power Cord

It is important that you follow these instructions carefully as improper connection/disconnection could result in the hazard of an electrical shock.

To Connect the Power Cord

1. Ensure the analyzer is powered off.
2. Plug the round power connector into the receptacle on the back of the analyzer.
3. Plug the power cord into a wall outlet or power strip.
4. Press the power switch on the back of the analyzer to the **on** (I) position.

To Disconnect the Power Cord

1. Shut down the analyzer (see “Shutting Down the Analyzer” above).
2. Press the power switch on the back of the analyzer to the **off** (O) position.
3. Unplug the power cord from the wall outlet or power strip.
4. Unplug the round connector from the receptacle on the back of the analyzer.

## Printing Test Results

The SNAPshot Dx Analyzer is connected to the IDEXX VetLab Station. Therefore, you print your SNAPshot Dx Analyzer test results using the print settings on the IDEXX VetLab Station (compatible printer required). For more information on printing while connected to the IDEXX VetLab Station, see the *IDEXX VetLab Station Operator's Guide*.

## B Using the SNAPshot Dx\* Analyzer

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### Overview

The SNAPshot Dx Analyzer is controlled via a touch-screen monitor on the front of the analyzer and by the IDEXX VetLab\* Station.

### Using the Touch Screen

To get the best results when using the touch screen:

- Do not rest your hand on the touch screen. The screen is sensitive to touch; pressure from your hand prevents the touch screen from functioning properly.
- Tap the screen firmly.
- Never tap the touch screen with a sharp or abrasive object.

The touch screen is on whenever the analyzer is on.

### Loading a SNAP\* Test

The proper way to load a SNAP test device into the analyzer is horizontally, sample well end first. Do not insert the SNAP device into the SNAPshot Dx Analyzer until the SNAPshot Dx Analyzer is ready to process the device.

**Important:** Do not remove a SNAP test from the analyzer during analysis—removing the device prematurely may result in loss of the run. Analysis is complete when the patient's name is moved from the In Process list to the Results list.

### Running a SNAP\* Test

For detailed instructions on running a specific SNAP test, see the “SNAP Test Procedures” chapter in this guide.

**IMPORTANT: Do not load a SNAP device until prompted by the analyzer.**

#### To Run a SNAP Test

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator's Guide*).
2. Once the patient's name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient's name and then tap **Select**.
3. Follow the on-screen instructions for preparing, incubating (SNAP Total T4 and Cortisol only), and loading the SNAP test.

When analysis is complete, the patient's name moves from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station's Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## Viewing Test Results

To View the Test Results on the SNAPshot Dx Analyzer

1. Tap the **Results** list.
2. Tap the patient whose test results you want to view.

**Note:** If you do not see the patient's name in the Results list, tap the page up ▲ and page down ▼ arrows to view additional patient names.

3. Tap **View Results** to display the Test Results screen.

To View the Test Results on the IDEXX VetLab Station

See the *IDEXX VetLab Station Operator's Guide* for detailed instructions on viewing test results.

## C SNAP\* Test Procedures

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### Overview

This chapter includes detailed information for each of the SNAP tests that the SNAPshot Dx\* Analyzer supports. You can use the information in this section to:

- Read a description of each SNAP test.
- Learn how to prepare each test for analysis (the process varies by test type).

For more information about SNAP test diagnosis, management, and interpretations, visit [idexx.com](http://idexx.com).

## SNAP\* Total T<sub>4</sub>

### Test Description

An enzyme-linked immunosorbent assay (ELISA) for the quantitative measurement of total T<sub>4</sub> (thyroxine) in canine, feline, and equine patients. With a SNAP Total T<sub>4</sub> Test, you can assess thyroid function, provide comprehensive one-visit screening for feline hyperthyroidism, presumptive hyperthyroidism and canine or equine hypothyroidism, as well as monitor response to treatment and adjust dosages immediately.

### Preparing and Running a SNAP Total T<sub>4</sub> Test

**Important:** Allow the SNAP Total T<sub>4</sub> Test to equilibrate in its sealed foil package at room temperature for at least 15 minutes. Do not heat. It is not necessary to equilibrate the conjugate solution at room temperature.

1. Enter the patient information on the IDEXX VetLab\* Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **Total T<sub>4</sub>** as the SNAP Test Type.
4. Select the applicable sample type.
 

**Note:** Plasma from the Catalyst\* whole blood separator may be used.
5. Tap **Next**.
6. If you are running a diluted sample, tap the Dilution ▲ or ▼ arrows to specify the parts diluent (see the “Total T<sub>4</sub> Dilution Guidelines” section on page C-3).
 

**Note:** T<sub>4</sub> dilutions have not been validated for equine samples.

**Important:** Before performing a dilution, always run an undiluted patient sample first. Samples should only be diluted when the undiluted sample result is >7.0 µg/dL (90.1 nmol/L).
7. Tap **Next** and follow the on-screen instructions to properly prepare the sample.
  - a. Use the purple handheld pipette to transfer 65 µL of sample into a disposable sample tube.
  - b. Use the 300-µL pipette to transfer 300 µL of conjugate into the same sample tube.
  - c. Cap the sample tube and gently invert it 4–5 times to mix.
  - d. Place the sample tube into an available incubator well.
  - e. Tap to start the incubation timer that corresponds to the well you selected (left or right). The incubation timer displays with the patient information in the Pending list on the Home screen (the timer counts down in 10-second intervals).
8. When incubation is complete (the patient information in the Pending list changes from “Incubating” to “Ready,” the text turns red, and the analyzer beeps), tap to select the patient in the Pending list.
9. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

10. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient's name moves from the Pending list to the In Process list.

When analysis is complete, the patient's name will move from the In Process list to the Results list (you may also receive a "New Results" alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station's Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

### Total T<sub>4</sub> Dilution Guidelines

The SNAPshot Dx Analyzer allows you to dilute canine and feline Total T<sub>4</sub> samples that initially report >7.0 µg/dL (90.1 nmol/L). Total T<sub>4</sub> dilutions have not been validated on equine samples.

#### To Ensure that You Receive the Most Accurate Results

- Only perform a dilution when the undiluted sample result is >7.0 µg/dL (90.1 nmol/L).
- Use the lowest dilution factor possible.
- Use only normal saline as the diluent.

**Note:** Conjugate volume remains at 300 µL even if you are running a diluted sample.

#### Preparing a 1:2 Dilution (1 part sample, 1 part saline)

1. Using the purple handheld pipette, dispense 65 µL of sample (serum or plasma) into a disposable sample tube (e.g., a disposable tube from the SNAP Total T<sub>4</sub> Test Kit).
2. Using the purple handheld pipette, add 65 µL of normal saline to the tube.
3. Cap the tube and gently invert 4–5 times to mix the sample and saline.
4. Using the purple handheld pipette, aspirate 65 µL of the diluted sample and run the SNAP Total T<sub>4</sub> Test as normal.

**Note:** When prompted, select **1** in the Dilution drop-down list.

#### Preparing a 1:4 Dilution (1 part sample, 3 parts saline)

**Important:** A 1:4 dilution is only recommended if the result of a 1:2 diluted sample is >14.0 µg/dL (180.2 nmol/L).

1. Using the purple handheld pipette, dispense 65 µL of sample (serum or plasma) into a disposable sample tube (e.g., a disposable tube from the SNAP Total T<sub>4</sub> Test Kit).
2. Using the purple handheld pipette, add 65 µL of normal saline to the tube 3 times.
3. Cap the tube and gently invert 4–5 times to mix the sample and saline.
4. Using the purple handheld pipette, aspirate 65 µL of the sample/saline combination and dispense it into a new disposable sample tube.
5. Using the diluted sample, prepare and run the SNAP Total T<sub>4</sub> Test as normal.

**Note:** When prompted, select **3** in the Dilution drop-down list.



## Interpreting Test Results

The recommendations below are intended to provide general guidance only. As with any diagnosis, you should use clinical discretion with each patient based on a complete evaluation of the patient, including history, physical examination, and complete laboratory profile.

Species	Results			
	U.S. Units ( $\mu\text{g/dL}$ )		S.I. Units ( $\text{nmol/L}$ )	
Canine <sup>†</sup>	<1.0	Low	<13	Low
	1.0–2.0	Low Normal	13–26	Low Normal
	1.0–4.0	Normal	13–51	Normal
	>4.0	High	>51	High
	2.1–5.4	Therapeutic	27–69	Therapeutic
Feline <sup>‡</sup>	<0.8	Subnormal	<10	Subnormal
	0.8–4.7	Normal	10–60	Normal
	2.3–4.7	Gray zone in old or symptomatic cats	30–60	Gray zone in old or symptomatic cats
	>4.7	Consistent with hyperthyroidism	>60	Consistent with hyperthyroidism
Equine	<1.0	Low	<13	Low
	1.0–3.8	Normal	13–49	Normal
	>3.8	High	>49	High

### <sup>†</sup>Canine Screening

- Dogs with a low total T4 (T4) and evidence of nonthyroidal illness (NTI) should have their NTI addressed.
- Dogs with T4 results in the low normal range may be hypothyroid.
- In dogs with low or low normal T4 results and with consistent clinical signs, consider free T4 (fT4) and endogenous thyroid-stimulating hormone (TSH) and possibly thyroglobulin autoantibodies (TgAA) to aid in confirming hypothyroidism.

### Hyperthyroidism Therapeutic Monitoring

For dogs on thyroid supplement, acceptable 4–6-hour post-pill T4 values will generally fall in the upper end of the reference range or slightly above.

### <sup>‡</sup>Feline Screening

Cats with consistent clinical signs and total T4 (T4) values in the borderline high range (gray zone) may have early hyperthyroidism or a concurrent nonthyroidal illness (NTI). In these cases, consider a free T4 (fT4), a T3 suppression test or radionuclide thyroid imaging to aid in confirming the diagnosis.

### Hyperthyroidism Therapeutic Monitoring

Following treatment with methimazole, T4 values will generally fall within the lower to midportion of the reference range.

## SNAP\* Cortisol

### Test Description

An enzyme-linked immunosorbent assay (ELISA) for the quantitative measurement of cortisol in canine patients. With the SNAP Cortisol Test (when used in conjunction with accepted protocols for ACTH stimulation and low-dose dexamethasone suppression tests), you can screen for Addison's disease and Cushing's syndrome. You can also monitor response to treatment and make adjustments to medications for patients diagnosed with Cushing's syndrome.

**Important:** DO NOT use the SNAP Cortisol Test if the patient has received:

- Dexamethasone (doses >0.1 mg/kg) in the last 7 days.  
OR
- Prednisone or other corticosteroids in the past 4 weeks.

### Preparing and Running a SNAP Cortisol Test

**Important:** Allow the SNAP Cortisol Test to equilibrate in its sealed foil package at room temperature for at least 10 minutes. Do not heat. It is not necessary to equilibrate the conjugate solution at room temperature.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the "Analyzing Samples" chapter of the *IDEXX VetLab Station Operator's Guide*).
2. Once the patient's name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient's name and then tap **Select**. The Identify Sample screen appears.
3. Select **Cortisol** as the SNAP Test Type (the sample type is chosen automatically).
4. Tap **Next**.
5. In the Protocol drop-down list, tap **ACTH Stim**, **LDDST**, or **HDDST**.  
**Note:** Take care not to exceed 0.1 mg/kg of dexamethasone.
6. In the Protocol Step drop-down list, tap the applicable protocol step. The options that are available vary based on the Protocol option that was selected in step 6.
7. Tap **Next** and follow the on-screen instructions to properly prepare the sample.
  - a. Using the appropriate handheld pipette (provided in the SNAPshot Dx sample prep kit), transfer the sample and conjugate into a disposable sample tube (see volumes below).

Protocol/Protocol Step	Sample Volume	Pipette Color	Conjugate Volume	Range†
Baseline Cortisol	100 µL	Gray	300 µL	0.5–10.0 µg/dL (13.8–276.0 nmol/L)
Dexamethasone Suppression Cortisol (low- or high-dose)	100 µL	Gray	300 µL	0.5–10.0 µg/dL (13.8–276.0 nmol/L)
ACTH Stim Cortisol: Cushing's Suspected	25 µL	Blue	300 µL	2.5–30.0 µg/dL (69.0–828.0 nmol/L)
ACTH Stim Cortisol: Addison's Suspected	100 µL	Gray	300 µL	0.5–10.0 µg/dL (13.8–276.0 nmol/L)

Protocol/Protocol Step	Sample Volume	Pipette Color	Conjugate Volume	Range <sup>†</sup>
ACTH Stim Cortisol: Therapeutic Monitoring	100 $\mu$ L	Gray	300 $\mu$ L	0.5–10.0 $\mu$ g/dL (13.8–276.0 nmol/L)
ACTH Stim Cortisol: Therapeutic Monitoring >10 $\mu$ g/dL	25 $\mu$ L	Blue	300 $\mu$ L	2.5–30.0 $\mu$ g/dL (69.0–828.0 nmol/L)

<sup>†</sup>“Range” refers to the test result range for a particular test’s protocol. When a test result falls outside of this range, it will be reported as either “>” (greater than the upper limit) or “<” (less than the lower limit).

- b. Cap the sample tube and gently invert it 4–5 times to mix.
  - c. Place the sample tube into an available incubator well.
  - d. Tap to start the incubation timer that corresponds to the well you selected (left or right). The incubation timer displays with the patient information in the Pending list on the Home screen (the timer counts down in 10-second intervals).
8. When incubation is complete (the patient information in the Pending list changes from “Incubating” to “Ready,” the text turns red, and the analyzer beeps), tap to select the patient in the Pending list.
  9. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
    - a. Place the device on a horizontal surface.
    - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
    - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.
  10. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## Interpreting Test Results

The recommendations below are intended to provide general guidance only. In all cases, it is important to exercise clinical judgement in interpreting cortisol results in the context of the patient’s history, clinical signs, physical status, and other laboratory data.

**Note:** Dexamethasone (doses >0.1 mg/kg), prednisone, and other corticosteroids are expected to artificially increase the reported result.

## A. ACTH Stimulation Test

<b>Pre-ACTH</b>	<b>Interpretation</b>
<2 $\mu\text{g/dL}$ (55.2 nmol/L)	Must evaluate in conjunction with post-ACTH result. If both results are <2 $\mu\text{g/dL}$ (55.2 nmol/L), results are consistent with hypoadrenocorticism. Begin treatment with mineralocorticoid and/or glucocorticoid as appropriate.
2–6 $\mu\text{g/dL}$ (55.2–165.6 nmol/L)	Normal
>22 $\mu\text{g/dL}$ (607.2 nmol/L)	Consistent with Cushing's syndrome; perform high-dose dexamethasone suppression test.

<b>Post-ACTH</b>	<b>Interpretation</b>
<2 $\mu\text{g/dL}$ (55.2 nmol/L)	Ideally, should be evaluated in conjunction with pre-ACTH result. If both results are <2 $\mu\text{g/dL}$ (55.2 nmol/L), results are consistent with hypoadrenocorticism. Begin treatment with mineralocorticoid and/or glucocorticoid as appropriate.
2–6 $\mu\text{g/dL}$ (55.2–165.6 nmol/L)	Inconclusive
6–18 $\mu\text{g/dL}$ (165.6–496.8 nmol/L)	Normal
18–22 $\mu\text{g/dL}$ (496.8–607.2 nmol/L)	Equivocal; Cushing's syndrome possible
>22 $\mu\text{g/dL}$ (607.2 nmol/L)	Consistent with Cushing's syndrome; perform high-dose dexamethasone suppression test to discriminate between PDH and ATH, ACTH level, and/or abdominal ultrasound.

## B. Low-Dose Dexamethasone Suppression Test

<b>4-Hour Cortisol Level</b>	<b>8-Hour Cortisol Level</b>	<b>Interpretation</b>
<1 $\mu\text{g/dL}$ (27.6 nmol/L)	<1 $\mu\text{g/dL}$ (27.6 nmol/L)	Normal
1–1.5 $\mu\text{g/dL}$ (27.6–41.4 nmol/L)	1–1.5 $\mu\text{g/dL}$ (27.6–41.4 nmol/L)	Inconclusive; consider repeating in 6–8 weeks.
>1.5 $\mu\text{g/dL}$ (41.4 nmol/L) and >50% of baseline	>1.5 $\mu\text{g/dL}$ (41.4 nmol/L) and >50% of baseline	Consistent with Cushing's syndrome; perform high-dose dexamethasone suppression test, endogenous ACTH concentration test, and/or abdominal ultrasound to discriminate between PDH and ATH.
<1.5 $\mu\text{g/dL}$ (41.4 nmol/L) or <50% of baseline	>1.5 $\mu\text{g/dL}$ (41.4 nmol/L) and >50% of baseline	Consistent with PDH
>1.5 $\mu\text{g/dL}$ (41.4 nmol/L) and >50% of baseline	>1.5 $\mu\text{g/dL}$ (41.4 nmol/L) and <50% of baseline	Consistent with PDH

## C. High-Dose Dexamethasone Suppression Test

<b>4-Hour Cortisol Level</b>	<b>8-Hour Cortisol Level</b>	<b>Interpretation</b>
<1.5 µg/dL (41.4 nmol/L) or <50% of baseline	>1.5 µg/dL (41.4 nmol/L) and >50% of baseline	Consistent with PDH
>1.5 µg/dL (41.4 nmol/L) and >50% of baseline	<1.5 µg/dL (41.4 nmol/L) or <50% of baseline	Consistent with PDH
<1.5 µg/dL (41.4 nmol/L) or <50% of baseline	<1.5 µg/dL (41.4 nmol/L) or <50% of baseline	Consistent with PDH
>1.5 µg/dL (41.4 nmol/L) and >50% of baseline	>1.5 µg/dL (41.4 nmol/L) and >50% of baseline	Additional testing required to differentiate PDH from ATH; consider measuring plasma ACTH levels and/or performing an abdominal ultrasound.

## D. Post-ACTH Stimulation Mitotane (Lysodren\*) Monitoring

<b>Loading Dose</b>	<b>Interpretation</b>	<b>Maintenance Dose</b>	<b>Interpretation</b>
<1 µg/dL (27.6 nmol/L)	Discontinue mitotane. If dog is listless or ill, administer maintenance prednisone in tapering dose for 2 weeks. If dog is clinically healthy, do not start prednisone, but start low maintenance dose of mitotane in 2 weeks.	<1 µg/dL (27.6 nmol/L)	Discontinue mitotane. If dog is listless or ill, administer maintenance prednisone in tapering dose for 2 weeks. If dog is clinically healthy, do not start prednisone. Restart mitotane maintenance therapy in 2 weeks, but reduce dose by 25%.
1–5 µg/dL (27.6–138.0 nmol/L)	Begin maintenance mitotane dosing (25–50 mg/kg per week with food in divided doses); repeat ACTH stimulation test in one month.	1–5 µg/dL (27.6–138.0 nmol/L)	Maintain current dosage; repeat ACTH stimulation test every 3–4 months.
>5 µg/dL (138.0 nmol/L)	Continue mitotane loading dose for 3–7 days; recheck 3–7 days; observe for adverse reaction.	>5 µg/dL (138.0 nmol/L)	Increase weekly dose or repeat loading dose for 3–7 days; observe for adverse reaction and then increase weekly maintenance dose.

**Note:** 1 µg/dL = 27.6 nmol/L

## SNAP\* Bile Acids

### Test Description

An enzyme-linked immunosorbent assay (ELISA) for the quantitative measurement of bile acids in canine and feline patients. The SNAP Bile Acids Test may be used as an initial screen to establish a baseline level for hepatic function or as a bile acids stimulation test where standard protocols are adhered to. Abnormal results obtained from the SNAP Bile Acids Test indicate hepatic dysfunction ranging from mild, as with nonspecific hepatopathy, to severe, as with portosystemic shunts. Bile acids may also be useful for monitoring the effects of therapeutic drugs on hepatic function and screening for occult liver dysfunction when enzyme levels are normal.

### Preparing and Running a SNAP Bile Acids Test

**Important:** Allow the SNAP Bile Acids Test and conjugate solution to equilibrate at room temperature for at least 30 minutes. Do not heat. Keep the SNAP test in its sealed foil package until ready to use.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **Bile Acids** as the SNAP Test Type.
4. Select the applicable sample type.
5. Tap **Next**.
6. In the Protocol drop-down list, tap **Preprandial**, **Postprandial**, or **Other**.
7. Tap **Next** and follow the on-screen instructions to properly prepare the sample.
  - a. Use the gray handheld pipette (provided in the SNAPshot Dx sample prep kit) to transfer 100  $\mu$ L of sample into a disposable sample tube.
  - b. Use the 300- $\mu$ L pipette to transfer 300  $\mu$ L of conjugate into the same sample tube.
  - c. Cap the sample tube and gently invert it 4–5 times to mix.
8. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.
9. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## Interpreting Test Results

The recommendations below are intended to provide general guidance only. In all cases, it is important to exercise clinical judgement in interpreting bile acid results in the context of the patient's history, clinical signs, physical status, and other laboratory data.

	Postprandial Result			
		<12 $\mu\text{mol/L}$	12-25 $\mu\text{mol/L}$	>25 $\mu\text{mol/L}$
Preprandial Result	<12 $\mu\text{mol/L}$	Normal; consistent with sufficient hepatic function	Retest at a later time (days to weeks) if liver dysfunction is still suspected and patient is anicteric <sup>†</sup>	Consistent with decreased hepatic function
	12-25 $\mu\text{mol/L}$	Retest at a later time (days to weeks) if liver dysfunction is still suspected and patient is anicteric <sup>†</sup>	Retest at a later time (days to weeks) if liver dysfunction is still suspected and patient is anicteric <sup>†</sup>	Consistent with decreased hepatic function
	>25 $\mu\text{mol/L}$	Decreased hepatic function possible Retest at a later time (days to weeks) if liver dysfunction is still suspected and patient is anicteric <sup>†</sup> Inadequate fast possible	Retest at a later time (days to weeks) if liver dysfunction is still suspected and patient is anicteric <sup>†</sup>	Consistent with decreased hepatic function

<sup>†</sup> Preprandial values will occasionally exceed postprandial values. This is usually attributed to spontaneous gall bladder contraction or preprandial specimen obtained prior to a sufficient fast. When preprandial values exceed the postprandial values, always check that pre- and postprandial samples are properly identified.

## SNAP\* fPL\*

### Test Description

The SNAP fPL Test is an in vitro test for the determination of pancreas-specific lipase levels in feline serum.

### Preparing and Running a SNAP fPL Test

**Important:** Allow all SNAP fPL test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **fPL** as the SNAP Test Type (the sample type is selected automatically).
4. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **4 drops of conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
5. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.

6. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.



## SNAP\* cPL\*

### Test Description

The SNAP cPL Test is an in vitro test for the determination of pancreas-specific lipase levels in canine serum.

### Preparing and Running a SNAP cPL Test

**Important:** Allow all SNAP cPL test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **cPL** as the SNAP Test Type (the sample type is selected automatically).
4. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **4 drops of conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
5. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.

6. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## SNAP\* 4Dx\* Plus

### Test Description

The SNAP 4Dx Plus Test is an in vitro test for the detection of *Dirofilaria immitis* antigen, antibody to *Anaplasma phagocytophilum*, antibody to *Anaplasma platys*, antibody to *Borrelia burgdorferi*, antibody to *Ehrlichia canis*, and antibody to *Ehrlichia ewingii* in canine serum, plasma, or whole blood.

**Note:** Any color development in the sample spots on a SNAP 4Dx Plus Test indicates a positive test result.

### Preparing and Running a SNAP 4Dx Plus Test

**Important:** Allow all SNAP 4Dx Plus test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **4Dx Plus** as the SNAP Test Type.
4. Select the applicable sample type.
5. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **4 drops of conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
6. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.

7. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## SNAP\* FIV/FeLV Combo

### Test Description

The SNAP FIV/FeLV Combo Test is a rapid immunoassay for simultaneous detection of feline leukemia virus (FeLV) antigen and antibody to feline immunodeficiency virus (FIV) in feline serum, plasma or whole blood. The presence of FeLV p27 antigen is diagnostic for FeLV infection, and the presence of specific antibodies to FIV indicates that a cat has been exposed to FIV and may have an active FIV infection.

**Note:** Any color development in the sample spots on a SNAP FIV/FeLV Combo Test indicates a positive test result.

### Preparing and Running the SNAP FIV/FeLV Combo Test

**Important:** Allow all SNAP FIV/FeLV Combo test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **Combo FeLV/FIV** as the SNAP Test Type.
4. Select the applicable sample type.
5. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **4 drops of conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
6. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.

7. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## SNAP\* Heartworm RT

### Test Description

The SNAP Heartworm RT Test is an in vitro diagnostic test for the semiquantitative detection of *Dirofilaria immitis* (*D. immitis*) antigen in canine and feline whole blood, serum, or plasma.

**IMPORTANT:** SNAPshot Dx supports the SNAP Heartworm RT Test with canine samples only—tests with feline samples must be read visually.

**Note:** Any color development in the sample spots on a SNAP Heartworm RT indicates a positive test result.

### Preparing and Running the SNAP Heartworm RT Test

**Important:** Allow all SNAP Heartworm RT test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **Heartworm RT** as the SNAP Test Type.
4. Select the applicable sample type.
5. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **4 drops of conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
6. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.
7. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## SNAP\* Feline proBNP

### Test Description

The SNAP\* Feline proBNP Test is a rapid immunoassay to assess the level of NTproBNP (N-terminal pro-brain natriuretic peptide) in Feline serum or EDTA plasma samples. NTproBNP is released by the myocardium in response to stress and stretch. A normal result indicates that moderate to severe heart disease is unlikely at the time of testing. An abnormal result indicates increased stretch and stress on the heart muscle. As NTproBNP levels may be increased in other conditions, such as hyperthyroidism, hypertension or severe azotemia, an abnormal result should be evaluated in the context of complete evaluation of the patient, including history, physical examination, and complete laboratory profile.

**Note:** If the color intensity of the sample spot is equal to or darker than the color intensity of the reference spot, the NTproBNP level is abnormal. If the color intensity of the sample spot is lighter than the color intensity of the reference spot, the NTproBNP level is normal.

### Preparing and Running the SNAP Feline proBNP Test

**Important:** Allow all SNAP Feline proBNP test components to equilibrate at room temperature for at least 30 minutes. Do not heat.

1. Enter the patient information on the IDEXX VetLab Station (for more information, see the “Analyzing Samples” chapter of the *IDEXX VetLab Station Operator’s Guide*).
2. Once the patient’s name appears in the Pending list on the SNAPshot Dx Home screen, tap the patient’s name and then tap **Select**. The Identify Sample screen appears.
3. Select **fBNP** as the SNAP Test Type.
4. Select the applicable sample type.
5. Tap **Optional Prep Instructions** if you would like to view on-screen sample preparation instructions.
  - a. Hold the provided pipette vertically and dispense **3 drops of sample** into a disposable sample tube.
  - b. Holding the bottle vertically, add **5 drops of green conjugate** to the sample tube.
  - c. Cap the sample tube and invert it 4–5 times to mix.
6. Tap **Next** and follow the on-screen instructions to properly prepare the SNAP test:
  - a. Place the device on a horizontal surface.
  - b. Add the entire contents of the sample tube to the sample well, being careful not to splash the contents outside of the sample well. The sample will flow across the result window, reaching the activation circle in 30–60 seconds. Some sample may remain in the sample well.
  - c. When color FIRST appears in the activation circle, press the activator firmly until it is flush with the device body.

**Note:** Some samples may not flow to the activation circle within 60 seconds. In this case, press the activator after the sample has flowed across the result window.

7. Insert the SNAP device into the SNAPshot Dx Analyzer immediately. The SNAPshot Dx Analyzer automatically begins to process the patient sample and the Home screen displays. The patient’s name moves from the Pending list to the In Process list.

When analysis is complete, the patient’s name will move from the In Process list to the Results list (you may also receive a “New Results” alert message and/or hear a beep on the IDEXX VetLab Station, depending on the option(s) you selected in the New Results Alert tab on the IDEXX VetLab Station’s Settings screen). You can then remove the SNAP device from the analyzer by gently pushing the SNAP device until you hear a click. The device will slide out of the port.

## D Modifying the Settings on the Analyzer

### Overview

Some of the Settings and Tools screen features allow you to customize the analyzer, such as selecting a time/date format and editing the In Process and Pending lists on the Home screen. This chapter describes how to use those features.

### Changing the Language/Local Settings

Tapping the Language/Local option on the Settings screen allows you to modify the analyzer's language, name format, unit system, time, and/or date.

#### Notes:

- This option is unavailable when the SNAPshot Dx\* Analyzer is processing a sample run.
- The analyzer will prompt you to restart it whenever the language/local settings are changed. You must restart the analyzer in order for the changes to take effect.

#### To Change the Language/Local Settings

1. Tap **Settings** on the SNAPshot Dx Home screen.
2. Tap **Language/Local**.
3. Select the desired language from the **Language** drop-down list. When a language is chosen, the Unit System and Name Format default settings change.
4. If desired, select a different **Name Format** option (last name, first name or last name first name).
5. If desired, select a different **Unit System** option (US, SI, or French SI).
6. Tap **Next**.
7. If desired, update the time settings:
  - a. Tap the arrows above or below the hour/minutes text boxes to increase or decrease the hours/minutes incrementally.
  - b. Select the **AM** or **PM** option for your system time.
  - c. Select a time format (hh:mm in 12-hour format or hh:mm in 24-hour format).
8. If desired, update the date settings:
  - a. Select a date format (**mm/dd/yyyy** or **dd/mm/yyyy**). The left and right date fields (above the date format options) vary depending on the date format you choose. For example, if you choose the date format mm/dd/yyyy, the month field is the left-most field, the day field is the middle field, and the year field is the right-most field. If you choose dd/mm/yyyy, the day field is the left-most field, the month field is the middle field, and the year field is the right-most field.
  - b. To change the month, tap the arrow above/below the current month selection to change the month incrementally.
  - c. To change the day, tap the arrow above/below the day to increase/decrease the day incrementally.
  - d. To change the year, tap the arrow above/below the year to increase/decrease the year incrementally.
9. Tap **Save**. When prompted, tap **Yes** to restart your analyzer and save the new settings.

## Adjusting the Volume of the Analyzer

The Sound feature on the Settings screen allows you to adjust the volume of the sounds the analyzer emits.

**Note:** If you do not wish to hear any analyzer sounds, select the **Mute** check box.

### To Adjust the Volume

1. Tap **Settings** on the SNAPshot Dx Home screen.
2. Tap **Sound**.
3. Tap the left arrow to decrease the volume or the right arrow to increase the volume. The analyzer plays a sample of that particular volume upon each tap.
4. Tap **Save**.

## Deleting a Patient from the Pending or In Process List

The Tools screen is available from the Home screen and provides options for editing the Pending and In Process lists. You can edit these lists by deleting a patient from the list.

### To Delete a Patient from the Pending List

1. Tap **Tools**.
2. Tap **Edit Pending**.
3. Tap to select the patient you want to remove from the Pending list.
4. Tap **Delete** in the Delete From Pending box.

### To Delete a Patient from the In Process List

You can also delete a patient from the In Process list by selecting the patient in the In Process list (on the SNAPshot Dx Home screen) and then tapping **Stop Run** in the Home screen's center display area.

1. Tap **Tools**.
2. Tap **Edit In Process**.
3. Tap to select the patient you want to remove from the In Process list.
4. Tap **Delete** in the Delete From In Process box.
5. Remove the SNAP device from the applicable port. If you accidentally remove the wrong SNAP device, you will need to run a new SNAP Test for that patient.

**Note:** The IDEXX VetLab\* Station displays the "New Results" alert even though no results exist for the deleted patient run (this message only displays if you've selected to receive a message with new results in the New Results Alert tab on the IDEXX VetLab Station's Settings screen).

# E Sample Preparation and Storage

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## Overview

The quality of your reference laboratory and in-house testing results is impacted by the quality of the sample you provide the lab/analyzer. Therefore, it is important that you always prepare samples properly. This chapter provides instructions for preparing quality samples, the recommended order of draw, and more.

See the table on pages E-2–E-4 for a list of the different sample types that each IDEXX VetLab\* analyzer is capable of running. The table provides the sample volume required for each sample type as well as how to prepare the sample. It also lists the sample type and volume for each SNAP\* test type.



## IDEXX Quality Sample Preparation

Test	Sample Volume Required	Serum	Plasma	Anticoagulated Whole Blood	Sample Preparation	Centrifuge (time/speed)
<b>SNAP* Total T<sub>4</sub> Test</b>	65 $\mu$ L	✓	✓		<b>serum:</b> allow to clot for 20 minutes <b>plasma:</b> gently invert collection tube for 30 seconds <b>Note:</b> Plasma recovered from a Catalyst* lithium heparin whole blood separator may be used.	<b>serum/plasma:</b> 120 seconds at a minimum of 12,000 RCF
<b>SNAP* Cortisol Test</b>	25 $\mu$ L or 100 $\mu$ L	✓			<b>serum:</b> allow to clot for 20 minutes	<b>serum:</b> 120 seconds at a minimum of 12,000 RCF
<b>SNAP* Bile Acids Test</b>	100 $\mu$ L	✓			<b>serum:</b> allow to clot for 20 minutes	<b>serum:</b> 120 seconds at a minimum of 12,000 RCF
<b>SNAP* fPL* Test</b>	3 drops	✓			<b>serum:</b> allow to clot for 20 minutes	<b>serum:</b> 120 seconds at a minimum of 12,000 RCF
<b>SNAP* cPL* Test</b>	3 drops	✓			<b>serum:</b> allow to clot for 20 minutes	<b>serum:</b> 120 seconds at a minimum of 12,000 RCF
<b>SNAP* 4Dx* Plus Test</b>	3 drops	✓	✓	✓	<b>serum:</b> allow to clot for 20 minutes <b>plasma:</b> gently invert collection tube for 30 seconds <b>whole blood:</b> gently invert collection tube for 30 seconds	<b>serum/plasma:</b> 120 seconds at a minimum of 12,000 RCF <b>whole blood:</b> none
<b>SNAP* FIV/FelV Combo Test</b>	3 drops	✓	✓	✓	<b>serum:</b> allow to clot for 20 minutes <b>plasma:</b> gently invert collection tube for 30 seconds <b>whole blood:</b> gently invert collection tube for 30 seconds	<b>serum/plasma:</b> 120 seconds at a minimum of 12,000 RCF <b>whole blood:</b> none
<b>SNAP* Heartworm RT</b>	3 drops	✓	✓	✓	<b>serum:</b> allow to clot for 20 minutes <b>plasma:</b> gently invert collection tube for 30 seconds <b>whole blood:</b> gently invert collection tube for 30 seconds	<b>serum/plasma:</b> 120 seconds at a minimum of 12,000 RCF <b>whole blood:</b> none
<b>SNAP* Feline proBNP</b>	3 drops	✓	✓		<b>serum:</b> allow to clot for 20 minutes <b>plasma:</b> gently invert collection tube for 30 seconds	<b>serum/plasma:</b> 120 seconds at a minimum of 12,000 RCF

## Sample Collection Order

In order to prevent coagulation and contamination, blood should be drawn into the collection tubes in a specific order.

**Note:** While the following orders are recommended by the various tube manufacturers, always follow your clinic's protocol for order of draw.

### Order for Evacuated Collection Tubes

The following is the recommended order of draw when using evacuated tubes:

1. Blood cultures
2. Citrate

**Note:** If drawing citrate first, it is important to draw and discard a small volume of blood before dispensing the sample into a citrate tube.
3. Serum (with or without gel)
4. Plasma/lithium heparin (with or without gel)
5. EDTA
6. Fluoride

### Order for Nonevacuated/Micro Collection Tubes

The following is the recommended order of draw when using nonevacuated/micro collection tubes:

1. Blood cultures
2. Citrate

**Note:** If drawing citrate first, it is important to draw and discard a small volume of blood before dispensing the sample into a citrate tube.
3. EDTA
4. Plasma/lithium heparin (with or without gel)
5. Fluoride
6. Serum (with or without gel)

## Centrifuged Sample Inspection

It is good practice to examine the sample carefully following centrifugation. If fibrin strands can be seen in the sample, they may interfere with sample pipetting. It may be necessary to rim the serum/plasma with a wooden stick, respin the sample, and proceed.

Various conditions, such as hemolysis, may affect results. You also want to modify your test panel based on the following visual observations.

### Hemolysis

*Visual:* Sample has a transparent reddish hue ranging from pale pink to deep red.

*Indications:* Damage to red cells during sample preparation or intravascular hemolysis.

### Icterus

*Visual:* Plasma has a transparent yellow to opaque brown color.

*Indications:* Obstructive or toxic liver disease, intravascular hemolysis.

### **Lipemia**

*Visual:* Sample has a pale, milky appearance, possibly with floating fat globules.

*Indications:* Recent ingestion of a fatty meal or dysfunction in lipid metabolism.

## Sample Storage

We recommend that you prepare and analyze samples immediately after collection for best results. However if storage is necessary, follow these sample storage and testing guidelines.

- Serum, plasma, and anti-coagulated whole blood (e.g., EDTA, heparin) can be stored in the refrigerator for up to one week (the storage temperature guidelines can be found in the SNAP test package insert(s)).
- For longer storage, serum or plasma can be frozen (-20°C or colder) and then recentrifuged before use.

### Analysis of Stored Samples

For samples stored at 2°C–8°C (36°F–46°F) and at -18°C (0°F):

- Allow the samples to come to room temperature (18°C–25°C/64°F–77°F).
- Mix the samples gently, but thoroughly, by inversion. Do not shake.
- Centrifuge the samples to remove any fibrin particles that may have formed during storage.
- Analyze the samples immediately after centrifugation.

## Overview

To ensure optimum performance of your SNAPshot Dx\* Analyzer, IDEXX recommends that you clean the case, screen, and the SNAP\* ports often.

## Upgrading the Software

IDEXX will provide you, on a periodic basis and at no charge, updated instrument software that may include new features. Be sure to read the software notes contained with each new release.

For detailed upgrading instructions, see the insert included with the upgrade disc.

**Note:** If you have IDEXX SmartService\* Solutions enabled on your IDEXX VetLab\* Station, software upgrades will be sent to the SNAPshot Dx Analyzer automatically.

## Cleaning the Case

Always disconnect the power cable before cleaning the analyzer.

Clean the outside of the analyzer with a damp, lint-free cloth. A mild liquid soap will remove grease. Do not use any of the following near the analyzer: organic solvents, ammonia-based cleaners, ink markers, sprays containing volatile liquids, insecticides, disinfectant, polish, or room freshener.

Care should be taken not to spill any samples, chemicals, cleaning agents, water, or other fluids on/ in the analyzer.

## Cleaning the SNAP Ports

Dust and animal hair can lead to analyzer failures. Keep dust and animal hair from entering the analyzer by keeping the SNAP insertion area clean and dust-free.

If anything is spilled in a port, wipe it immediately with a damp, lint-free cloth. Confine wiping and cleaning of the ports to the bottom, side, and rear surfaces. If any fluid cannot be reached, call IDEXX Technical Support for service.

## Cleaning the Screen

If the screen gets dirty, apply an antistatic screen cleaning agent (NOT ammonia-based) to a clean cloth or paper towel and wipe the screen. Do not spray the cleaner directly onto the screen as liquid can run inside the case and damage electrical circuits. Take care not to scratch the screen.

## Cleaning the Incubator Wells

The incubator wells can be cleaned with a damp, lint-free cloth.

**Note:** There are holes in the bottom of the incubator wells. If liquid is spilled inside of a well, you may need to move your SNAPshot Dx Analyzer slightly to clean the counter underneath the analyzer.

## Calibration

The SNAPshot Dx Analyzer requires no user intervention for calibration. It performs a self-check at the beginning of each test as well as an automatic systems check each time the analyzer is powered on.

### Differences in Results

Every commercial laboratory must establish its own species reference ranges for the equipment and methodology used. **Comparing results from different laboratories that may be using different equipment or methods is imprecise at best.** Any comparisons should be performed on the same sample which has been “split,” stored under like conditions, and tested at approximately the same time. Comparisons of values must take into account differences in the corresponding reference ranges and technology.

If you receive results that are not what you expected for a particular patient, consider the following:

- Was the correct handheld pipette used (SNAP\* Total T4, Cortisol and Bile Acids only) and the correct volume of sample and conjugate aspirated?
- Was the sample incubated for 5 minutes? (SNAP\* Total T4 and Cortisol only)
- Was the device activated as soon as the sample reached the activation circle?
- Are there any abnormalities on the SNAP\* device (e.g., streaking or high background color)?
- For SNAP tests that can also be read visually (e.g., SNAP\* 4Dx Plus), the SNAPshot Dx\* Analyzer was developed to read any color in the sample spots as positive, as outlined in the product insert.
- Do other clinical findings support the results?
- What other tests or procedures might be used to confirm or reject this result?

All laboratory results should be interpreted in light of the case history, the clinical signs, and the results of ancillary tests.

### Wrong SNAP\* Device Removed

If you remove the wrong SNAP device from a port on the analyzer, do not reinsert the SNAP device. You must run a new SNAP test for that patient.

### Touch Screen Not Responsive

If you notice a decline in the responsiveness of the touch screen, it may be because the analyzer has not been shut down for a long period of time. Shut down the analyzer and then power on the analyzer (for instructions, see page A-4). If you still do not notice an increase in responsiveness, contact IDEXX Technical Support.

### SNAP Bar Code Cannot Be Read

There is a small bar code located on top of all SNAP devices. When you place a SNAP device inside of the SNAPshot Dx Analyzer, the analyzer reads that bar code.

When the analyzer cannot read the bar code, a SNAP Status Event dialog box appears on the SNAPshot Dx Analyzer screen, prompting you to enter the bar code information manually or to confirm the SNAP test.

### To Enter the Code Manually (SNAP Total T4, Cortisol, or Bile Acids only)

1. Select the SNAP test type from the drop-down list.
2. Use the keypad in the dialog box to enter the STD CURVE number found on the SNAP foil bag.

**Note:** Tapping the Back button removes the last digit entered with the keypad.

3. Tap **Start Run**.

### To Confirm the SNAP Test

When prompted, tap **OK** to confirm that you are running the SNAP test listed in the dialog box. The SNAP test will continue processing normally.

OR

If you are unable to confirm that the SNAP test listed in the dialog box is the same SNAP test that was inserted, tap **Cancel** and delete the run.

## Viewing the Event Log

Any issues that the analyzer has experienced are recorded in the analyzer's event log. These issues are expressed as codes which are used by IDEXX Technical Support to diagnose problems with the analyzer.

### To View the Event Log

1. Tap **Tools**.
2. Tap **Event Log**. The analyzer's software version, serial number, IVLS status, and IP address are listed at the top of the screen. The date and time that each issue occurred are listed in the center of the screen.

## Other Problems with Your Analyzer

If you experience problems with your analyzer, ensure that the power connections are secure.

If the connections are secure and the problem persists, shut down (or power off) the analyzer and then turn it back on. If the problem still persists, contact IDEXX Technical Support (see the "IDEXX Technical Support Contact Information" section on page H-21 for the applicable phone number for your region).

## Sending Your Analyzer to IDEXX

Before you send your analyzer to IDEXX, contact IDEXX Technical Support to arrange for a replacement analyzer and to obtain a prepaid shipping label.

### To Package Your Analyzer for Shipment

1. Gather the IDEXX SNAPshot Dx Analyzer packaging components.
2. Power off the analyzer (for more information, see “Shutting Down the Analyzer” on page A-4).
3. Disconnect the power and network cables from the back of the analyzer.
4. Ensure the SNAP ports and incubator wells are empty.
5. Position the box on a waist-high surface next to the analyzer.
6. Ensure there is a cardboard tray in the bottom of the box, plastic side up.
7. Cover the analyzer with the plastic bag.
8. Place the analyzer upright inside the box, centering it on the cardboard tray.

**Note:** The front of the analyzer should be facing one of the sides (short ends) of the box.

9. Place the upper cardboard insert inside the box so that the top of the analyzer is exposed through the center hole (see graphic).
10. Place the small cardboard insert into the recessed area on the top of the analyzer (see graphic).
11. Place a cardboard tray, plastic side down, inside the box.
12. Close the box and secure it with packing tape.



## Frequently Asked Questions

Question	Answer
Can I run two different SNAP tests at the same time?	Yes. The SNAPshot Dx Analyzer can process two SNAP tests at the same time.
How do I run a SNAP test on the SNAPshot Dx Analyzer?	The SNAPshot Dx screen provides on-screen instructions for using the analyzer. It is important to follow these instructions and load the SNAP test immediately after it has been activated.  For more information, see chapter C in this guide.
Can I run a SNAP test on the bench and then have the analyzer read the result after it has finished developing?	You must load the SNAP test into the analyzer immediately after it has been activated. Results may be impacted if there is a delay in inserting the device after it has been activated.

<b>Question</b>	<b>Answer</b>
How do I prepare samples for use on the SNAPshot Dx Analyzer?	<p>The SNAPshot Dx work flow includes detailed sample preparation instructions that are based on the test information you have selected.</p> <p>In addition to the on-screen instructions, you can reference the SNAPshot Dx sample preparation poster.</p>
Can I run non-bar-coded SNAP tests on the analyzer?	<p>Only SNAP tests that have a bar code and appear on the SNAPshot Dx test type menu can be run on the analyzer.</p> <p>We recommend that you work through your non-bar-coded inventory using the visual-read work flow and the IDEXX VetLab Station feature for recording SNAP test results.</p>
Do I still need to warm up the SNAP device before I run it on the analyzer?	<p>Yes, the SNAP device must be warmed up according to the specifications recommended in the product insert.</p>
Is it critical to remove the sample tube from the incubator well after exactly 5 minutes?	<p>Yes, the tube needs to be removed immediately. Results may be impacted if the sample under or over incubates.</p>



## Technical Specifications

### Dimensions

Width: 8.1 inches (20.5 cm)  
Depth: 11.4 inches (29 cm)  
Height: 12.8 inches (32.5 cm)  
Weight: 9.4 pounds (4.25 kg)

### Power Supply

External power supply adapter, model ATS065T-P240  
Input: 100–240 V AC, 50–60 Hz, 1400 mA  
Output: 24 V DC, 2710 mA

### Consumption

Operating: maximum 60 W, typical 44 W

### System Description

Type: Digital Imaging System  
Light source: LEDs  
Wavelength: 640 nm

### Operating Conditions

	<b>Operating</b>	<b>Storage</b>
Temperature	19°C–27°C (66°F–81°F)	17°C–32°C (63°F–90°F)
Relative Humidity	30%–85%	20%–85%

## IDEXX Technical Support Contact Information

IDEXX Sales Representative: \_\_\_\_\_

Telephone/Voice Mail: \_\_\_\_\_

United States: 1-800-248-2483

Australia: 1300 44 33 99

Austria: 43 (0)1 206 092 729

Belgium: 32 (0)27 00 64 38

Brazil: 0800-777-7027

Canada: 1-800-248-2483

China (PRC): 400-678-6682

Czech Republic: 420-239018034

Denmark: 45 (0) 43 31 04 39

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Finland: 358 (0)9 7252 2253

France: 33 (0) 810 433 999

Germany: 49 (0)69 153 253 290

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Italy: 39 02 87 10 36 76

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Netherlands: 31 (0)70 700 7033

New Zealand: 0800 10 20 84

Norway: 47 24 05 51 10

Poland: 48 22 853 40 01

Russia: 7-4999-511-255

Singapore: 65 6807-6277

Slovakia: 421-268622417

South Korea: 080 7979 133

Spain: 34 932 672 660 or 34 916 376 317

Sweden: 46 (0)8 5198 9566

Switzerland: 41 (0)44 511 22 37

Taiwan: 0800 291 018

United Kingdom: 44 (0)20 3788 7508

