

# PTS PANELS® Metabolic Chemistry Panel Test Strips

## for use with CardioChek® P•A Analyzer

### INTENDED USE

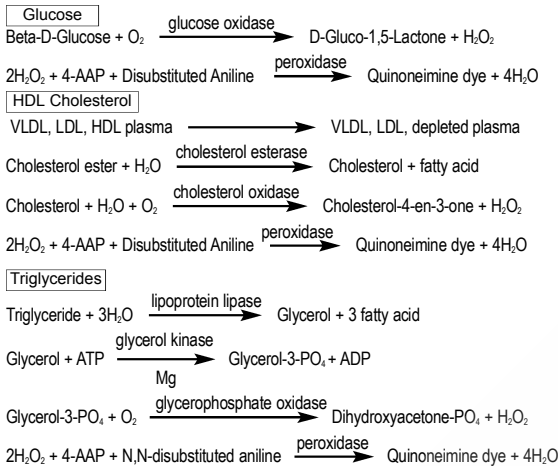
PTS PANELS Metabolic Chemistry Panel Test Strips measure glucose, HDL cholesterol and triglycerides in fingerstick whole blood. Glucose measurements are used in the management of carbohydrate metabolism disorders. HDL cholesterol and triglycerides measurements are used in the diagnosis and treatment of lipoprotein metabolism and lipid disorders (such as diabetes mellitus), atherosclerosis, and various renal and liver diseases. The frequency of HDL cholesterol and triglycerides testing should be determined in consultation with your physician. Use this product at the frequency that your doctor recommends testing for HDL cholesterol and triglycerides. This does not replace a glucose meter.

### SUMMARY

Metabolic Chemistry Panel Test Strips measure glucose, HDL cholesterol and triglycerides in whole blood with the CardioChek P•A analyzer. A MEMo Chip™ is provided with each package of test strips and must be properly inserted into the analyzer before any test can be run. The MEMo Chip contains test name, calibration curve, lot number and test strip expiration date. After the test strip is inserted into the analyzer and blood applied to the strip, test results are displayed in about two minutes.

### PRINCIPLES OF THE TEST

When blood is applied to a test strip, the blood reacts to produce color that is read by the analyzer using reflectance photometry. The amount of color produced is proportional to the concentration. The enzymatic reactions that occur are listed below.



### MATERIALS PROVIDED

- Vial of test strips and desiccant
- MEMo Chip (contains lot-specific test strip information)
- Instructions

### MATERIALS NEEDED BUT NOT PROVIDED

- CardioChek P•A analyzer
- Quality Control Materials
- Lancets for fingerstick (or venous blood collection supplies)
- Alcohol wipes and/or gauze
- Capillary Blood Collector or other precision pipet for blood collection and application

### CHEMICAL COMPOSITION

Each Metabolic Chemistry Panel Test Strip contains the following active ingredients:

Cholesterol Esterase (Microorganism)	≥ 1.75 I.U.
Cholesterol Oxidase (Microorganism)	≥ 11 I.U.
Glucose oxidase (Aspergillus niger)	≥ 0.2 I.U.
Peroxidase (Horseradish)	≥ 10 I.U.
4-aminoantipyrine	≥ 64 µg
Substituted aniline derivatives	≥ 60 µg
Phosphotungstic acid	≥ 0.3 mg
N, N-disubstituted aniline	≥ 50 µg
Glycerol-3-Phosphate Oxidase (Microorganism)	≥ 1.5 I.U.
Glycerol Kinase (Microorganism)	≥ 2.0 I.U.
ATP (Microorganism)	≥ 50 µg
Lipoprotein lipase (Microorganism)	≥ 4.5 I.U.

Each vial contains not more than 5g silica gel desiccant.

### STORAGE AND HANDLING

- Store test strip package in a cool, dry place at room temperature of 68-86°F (20-30°C). Strips may be stored in a refrigerator at 35-46°F (2-8°C), but must be brought to room temperature before using. Do not freeze.
- Keep away from heat and direct sunlight.
- Do not remove or discard the desiccant packet in the vial.
- Always replace vial cap immediately after removing a test strip.
- Use test strip as soon as you have removed it from the vial.
- Keep the MEMo Chip either in the analyzer or stored with the original lot of strips.
- Store the test strips in the original vial. Do not combine with other strips and do not store the MEMo Chip in the test strip vial.
- After opening, the test strips are stable until expiration date if vial is properly stored and always capped.

### PRECAUTIONS

- For *in vitro* diagnostic use.
- Metabolic Chemistry Panel Test Strips can only be used in the CardioChek P•A analyzer.
- Make sure the MEMo Chip and test strip lot numbers match. Never use a MEMo Chip from a different lot than the test strip.
- Out-of-date or expired strips cannot be used in your test system. Check vial for expiration date.
- Add all of the blood to the test strip at one time. If you do not get all of the blood on the strip, do not add blood to the same strip. Test again with a new unused test strip and fresh blood sample.
- Discard test strip after using. Strips are to be read once. Never insert or read a used test strip.
- **Do not ingest.**

### SPECIMEN COLLECTION AND PREPARATION

PTS PANELS Test Strips are designed for use with fresh capillary (fingerstick) whole blood. Fresh venous whole blood collected in EDTA or heparin tubes is also an acceptable sample. To obtain a drop of blood from a fingerstick, follow the steps listed below:

- Use of lotions and handcreams should be avoided before testing.
- Hands should be washed in warm water with antibacterial soap and rinsed and dried thoroughly.
- If you wipe the fingertip with alcohol, be sure that the alcohol dries completely before sticking the finger.
- Use a sterile, disposable lancet to puncture the side of the fingertip.
- Wipe away the first drop of blood with a clean piece of gauze.
- Gently, without force, apply pressure to the fingertip to accumulate a drop of blood.
- Excessive squeezing of the finger may alter test results.
- See the "TESTING" section for information on how to apply the blood to the test strip.
- Discard used materials properly.

Caution: Handle and dispose of all materials coming in contact with blood according to universal precautions and guidelines.

### TESTING

**IMPORTANT: Read all instructions carefully before testing. Test patient in a fasting state.**

1. Insert the MEMo Chip that matches the lot number on the test strip vial and press one of the buttons to turn the analyzer ON.
2. Hold the test strip by the end with the horizontal raised lines. Insert the opposite end of the strip into analyzer. Push the strip in as far as it will go.
3. When APPLY SAMPLE appears on the display, use a capillary blood collector or pipet to apply 35-40 µL of whole blood to the test strip blood application window.
4. In about two minutes, the GLUCOSE result will appear on the display. (To display HDL CHOL, press the NEXT button. To display TRIG press the NEXT button again.) Remove and discard strip. **DO NOT** add more blood to a test strip that has been used.

\* NCEP expected values for triglycerides require patient to be fasting (No food or drink except water for at least 9 hours.)

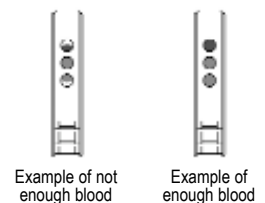
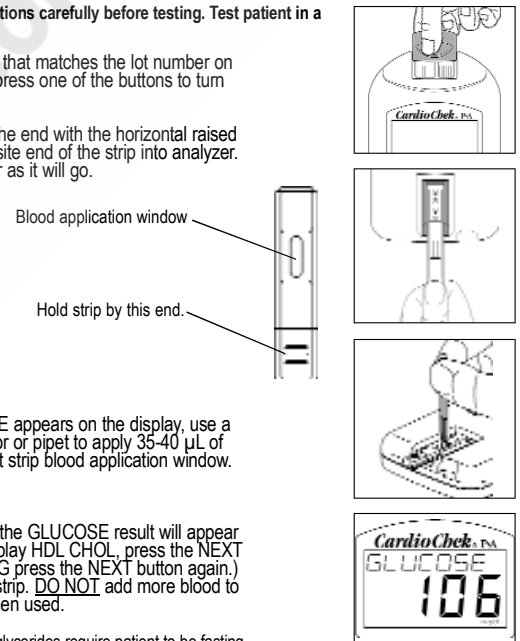
To verify that enough blood has been applied to the test strip, after testing is completed, remove strip and check back of strip. If areas are not completely and evenly colored, discard strip and test again. See diagram.

### TEST RESULTS

Results are displayed in either milligrams per deciliter (mg/dL) or in millimoles per liter (mmol/L). The mg/dL measurement is a US version, while mmol/L is used in many countries around the world. The CardioChek P•A is preset to US units by the manufacturer. No calculation of results is necessary. To change to INTL (mmol/L) units, please see CardioChek P•A User Guide.



Manufactured by  
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## CALIBRATION AND QUALITY CONTROL

Quality Control tests are used to ensure that the total system (analyzer, strips, MEMo Chip) is working properly and that the test results are accurate and reliable within the limits of the system. Users should run controls when results are questionable or to comply with their own facility's quality control requirements. See the CardioChek P•A User Guide for instructions on how to run controls. The CardioChek P•A is factory calibrated before it is packaged. Use the Check Strip supplied to verify that the analyzer's electronics and optics are working properly. The Check Strip is NOT a Quality Control test. Please refer to the CardioChek P•A User Guide for the proper procedure to be used to perform a Quality Control test.

## EXPECTED VALUES

### Glucose Expected Values

Blood glucose levels will vary from time to time depending on food consumed, activity levels, health status, medication dosages, stress or exercise. Your physician or healthcare professional will discuss "target values" (that is, highs and lows) specifically appropriate for you. A glucose level below 50 mg/dL (2.78 mmol/L) or above 240 mg/dL (13.32 mmol/L) may indicate a serious medical condition. If your test result should fall below 50 mg/dL (2.78 mmol/L) or exceed 240 mg/dL (13.32 mmol/L), you should contact your physician or healthcare professional as soon as possible. Expected values are for a fasting person, who does not have diabetes are: 70-105 mg/dL (3.9-5.8 mmol/L).<sup>6</sup>

### HDL Cholesterol Expected Values

- Below 40 mg/dL (1.04 mmol/L) – low HDL (High risk for CHD\*)
- 60 mg/dL (1.55 mmol/L) and above – high HDL (Low risk for CHD\*)

\* CHD - Coronary Heart Disease

### Triglycerides Expected Values (for persons fasting for at least 9 hours)

- Below 150 mg/dL (1.70 mmol/L) – normal
- 150-199 mg/dL (1.70-2.25 mmol/L) – borderline high
- 200-499 mg/dL (2.26-5.64 mmol/L) – high
- 500 mg/dL and above (5.65 mmol/L) – very high

## MEASURING RANGE

Metabolic Chemistry Panel Test Strips will display numeric results in the following ranges:

Glucose: 20-600 mg/dL (1.11-33.3 mmol/L)  
HDL Cholesterol: 25-100 mg/dL (0.65- 2.59 mmol/L)  
Triglycerides: 50-500 mg/dL (0.57- 5.65 mmol/L)

Results below the range will read "< \_\_\_" (less than the measuring range). Results above this range will read "> \_\_\_" (greater than the measuring range).

IMPORTANT: If you get a result of "< \_\_\_" (less than) or "> \_\_\_" (greater than) or an unexpected result for any test, **test again** with a new unused test strip.

## LIMITATIONS OF THE PROCEDURE

Studies were performed to test for substances that may interfere with these tests. The results are below.

1. PRESERVATIVES: Blood samples preserved with Fluoride or Oxalate should not be used for testing with this system. EDTA and heparin tubes are appropriate for collection of venous blood.
2. DRUGS: Dopamine and methylidopa decreased the results of HDL cholesterol and triglycerides.
3. METABOLITES: Extremely high doses of ascorbic acid (Vitamin C) may decrease HDL and triglycerides results. Normal concentrations of Vitamin C did not effect the glucose results.
4. HEMATOCRIT: No hematocrit effect was observed for samples between 30 and 45% HCT.
5. ALTITUDE: Testing at altitudes up to 5280 feet has no effect on glucose results.
6. DEHYDRATION: Severe dehydration and excessive water loss may produce falsely low results.

### Additional Considerations:

1. NEONATAL USE: There has been no data generated to validate the use of this system with neonatal blood specimens. Until such data become available, this test system should not be used on neonatal samples.
2. Cosmetics such as handcreams or lotions often contain glycerol. Use of these products may cause inaccurate results.
3. Displayed results are rounded.

## PERFORMANCE CHARACTERISTICS

1. ACCURACY: Glucose results were compared to a commercially available hexokinase method.

### PTS PANELS Glucose vs. Commercially Available Glucose System

Number of patients = 120

slope = 0.951

y-intercept = 5.36

r = 0.99

Results from clinical studies comparing the PTS PANELS Test Strips to the Cholesterol Reference Method Laboratory Network (CRMLN) serum methods for HDL cholesterol and triglycerides are listed below:

### PTS PANELS HDL Cholesterol vs. Abell-Kendall method run by a CRMLN laboratory

n = 87 samples

range of samples tested: <25 to 80 mg/dL

y = 1.10x - 4.1

r = 0.89

### PTS PANELS Triglycerides vs. CRMLN reference method

n = 111 samples

range of samples tested: 68 to 481 mg/dL

y = 0.97x + 2.8

r = 0.97

The Metabolic Chemistry Panel Test Strips were run by professionals on a CardioChek P•A and the results were compared to results from a commercially available automated laboratory analyzer. The results are listed by test as follows:

### Glucose Comparison

n = 108 samples

range of samples tested: 51 to 557 mg/dL

y = 0.88x + 14.4

r = 0.992

### HDL Cholesterol Comparison

n = 95 samples

range of samples tested: 28 to 89 mg/dL

y = 0.93x + 6.7

r = 0.903

## Triglycerides Comparison

n = 68 samples

range of samples tested: 57 to 341 mg/dL

y = 1.19x -16.6

r = 0.985

The Metabolic Chemistry Panel Test Strips compare well to automated laboratory methods.

2. PRECISION: Twenty replicates of various levels of whole blood were tested using the Metabolic Chemistry Panel Test Strips. The following results were obtained:

### Glucose

No. of Samples	20	20	20	20	20
Mean Glucose Conc. (mg/dL)	34.7	73.7	105.9	185.0	226.7
Std. Deviation (mg/dL)	3.01	4.04	4.59	7.59	8.23
Coefficient of Variation (%)	8.67	5.48	4.33	4.10	3.63

This means that the variation between test strips is not greater than 8.7%.

### HDL Cholesterol

No. of Observations (n)	20	20
Mean HDL Conc. (mg/dL)	35.7	68.7
Std. Deviation (mg/dL)	2.87	5.53
Coefficient of Variation (%)	8.04	8.05

### Triglycerides

No. of Observations	20	20	20
Mean Triglycerides Conc. (mg/dL)	86.2	152.6	331.3
Std. Deviation (mg/dL)	5.78	6.33	12.60
Coefficient of Variation (%)	6.71	4.15	3.80

INTERFERENCE: See Limitations Section.

## CLIA INFORMATION (US only)

Complexity Categorization: Waived

## AVAILABILITY

REF/CAT NO.	DESCRIPTION
1708	CardioChek P•A Analyzer
2400	Metabolic Chemistry Panel Test Strips, 15 count
2408	Metabolic Chemistry Panel Test Strips, 3 count
0721	PTS PANELS Multi-Chemistry Controls – Level 1 & Level 2
0722	PTS PANELS HDL Cholesterol Controls – Level 1 & Level 2

## REFERENCES

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10. Friedewald et al., Clin Chem. 1972. 18(6):499-502.
11. Castelli, WP, et al. Circulation 1983. 67(4): 730-734.

## CUSTOMER SERVICE

Customer Service is available to answer questions regarding the CardioChek P•A and Metabolic Chemistry Panel Test Strips. Outside Customer Service hours, please contact your healthcare professional. (877) 870-5610 (8 a.m. – 5 p.m. EST, M-F toll-free inside the US) (317) 870-5610, FAX (317) 870-5608  
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The CardioChek P•A and PTS PANELS Metabolic Chemistry Panel Test Strips are manufactured in the US by Polymer Technology Systems, Inc., Indianapolis, IN 46268.

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## Explanation of Symbols

	Use By/ Expiration date	<b>REF</b>	Catalog number
			Consult instructions for use
	Batch Code/ Lot number		Manufacturer
	For in vitro diagnostic use		Store at/Temperature limitation
	This product fulfills the requirements of Directive 98/79/EC on in vitro diagnostic medical devices.		