Regional Medical Center®

**STANDARD OPERATING PROCEDURE:** CMP on the Piccolo Xpress® Chemistry Analyzer

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| **Date:** 9-1-2024 | **Supersedes:** NA |
| **Distributed By:** Laboratory | **Reviewed:** NA |

**Purpose:**

The Piccolo® Comprehensive Metabolic Panel, used with the Piccolo Xpress® chemistry analyzer, is intended to be used for the in vitro quantitative determination of alanine aminotransferase (ALT), albumin, alkaline phosphatase (ALP), aspartate aminotransferase (AST), calcium, chloride, creatinine, glucose, potassium, sodium, total bilirubin, total carbon dioxide, total protein, and blood urea nitrogen (BUN) in heparinized whole blood, heparinized plasma, or serum.

Sample:

1. Use only lithium heparin (green stopper) evacuated specimen collection tubes for whole blood or plasma samples. Use no-additive (red stopper) evacuated specimen collection tubes or serum.When collecting the sample in lithium heparin collection tubes, fill the tube at least halfway so that it does not become too concentrated in the sample.
2. The minimum required sample size is ~100 µL.
3. Whole blood samples obtained by venipuncture must be homogeneous before transferring a sample to the reagent disc. Gently invert the collection tube several times just prior to sample transfer. Do not shake the collection tube; shaking may cause hemolysis. Hemolysis may cause erroneously high results in potassium assays.
4. Whole blood venipuncture samples should be run within 60 minutes of collection.
5. The sample must be separated into plasma or serum and stored in capped sample tubes at 2-8°C in the dark if the sample cannot be run within 60 minutes.
6. Samples are stable for 48 hours stored at 2-8°C or 5 weeks stored at -10°C.

**Procedure:**

1. Turn on the analyzer by pressing the Power button on the front of the analyzer. Do this before taking discs from the refrigerator. The analyzer will start up, then perform a self test. The display will show Warming if the analyzer needs time to warm the disc chamber to operating temperature.
2. When the analyzer reaches operating temperature, Analyze will show on the home screen.

3. Wear powder-free gloves while handling reagent discs or operating the analyzer.
4. Remove a disc package from the refrigerator. They can be used directly from the refrigerator without warming. The disc must be used within 48 hours at room temperature. Do not place discs back in the refrigerator. Only take 1 disc out at a time.
5. Use a pipette to dispense approximately 100 µL of sample into the disc.
6. Make sure there are no air bubbles or air gaps in the pipette tip.
7. Place the pipette tip into the disc sample chamber, and tilt the disc to 45° with the sample port above the fill line, so that the entire sample flows into the sample chamber.
8. The tip should touch the sample chamber. Push the plunger down with a slow, continuous motion. Take care not to overfill the sample chamber.
9. A 90 µL sample will fill the sample chamber and form a line between the two arrows molded on the disc. More than 120 µL will overfill the chamber, which can cause analyzer contamination and contribute to component failures.
10. Keep the pipette plunger pressed down until the tip is removed from the sample port.
11. Clean the disc. Use a lint-free tissue to remove any sample spilled on the outside of the disc, taking care that the tissue does not withdraw any sample from the sample port.
12. Select Analyze on the touchscreen to open the disc drawer. The following messages will appear. **Opening drawer** followed by **Close drawer to analyze a sample.**
13. Disc must be placed in the instrument within 10 minutes after adding the sample.
14. Place the disc in the recessed area in the drawer
15. Press Close to close the drawer.
16. Select the sample type from the display. **Patient** or **Control.**
17. Enter an ID number for the sample, then select **Done.**
18. The analyzer will then check the disc type and begin processing the sample.
19. When the sample is finished processing, the analyzer will store the results and show that the analysis is complete.
20. The analyzer will automatically print analysis results.
21. Select **Open** to open the disc drawer.
22. Remove the disc from the drawer.
23. When finished, select **Close** to close the drawer and return the analyzer to standby mode.
24. Troubleshooting Problem Results The symbols ~~~ are printed in place of numbers when a result cannot be determined.. This may happen due to improper mixing of a reagent bead with diluted sample, a nonlinear reaction, an endpoint of a particular reaction not reached, or a concentration outside the analyzer's capabilities. When a chemistry result is suppressed (~~~), the analyzer will prompt to print an error report. CONFIRM LOW RECOVERIES with an exclamation point (!) next to every analyte indicates that at least one of the analytes has a lower concentration that would normally

be expected. If this occurs, re-run the sample. If it happens again, the sample may be problematic. HEM, LIP, or ICT is printed in place of the analyte concentration if the interferent has adversely affected the results. LIP is also printed if both lipemia and icterus have been affected. HEM is also printed if hemolysis and icterus, hemolysis and lipemia, or hemolysis, lipemia, and icterus have affected a particular analyte. Examine the sample indices to determine if more than one interferent is affecting a particular result.

25. Any result for a particular test that exceeds the assay range should be analyzed by another approved test method or sent to a referral laboratory. Do not dilute the sample. Refer to the (link Policy) Piccolo Policy for further instructions. Tech Support can also be contacted at 1-800-822-2947.

**Results:**

| **Analyte** | **Expected Values** | **Linearity** |
|---|---|---|
| Sodium (NA+ ) | 128-145 mmol/L | 110-170 mmol/L |
| Potassium (K+ ) | 3.6-5.1 mmol/L | 1.5-8.5 mmol/L |
| Total Carbon Dioxide (tCO2 ) | 18-33 mmol/L | 4-40 mmol/L |
| Chloride (CL- ) | 98-108 mmol/L | 80-135 mmol/L |
| Glucose (GLU) | 73-118 mg/dL | 10-700 mg/dL |
| Calcium (CA) | 8.0-10.3 mg/dL | 4.0-16.0 mg/dL |
| Blood Urea Nitrogen (BUN) | 7-22 mg/dL | 2-180 mg/dL |
| Creatinine(CRE) | 0.6-1.2 mg/dL | 0.2-20 mg/dL |
| Alkaline Phosphatase (ALP) | Male 53-128 U/L | 5-2400 U/L |
| Alkaline Phosphatase (ALP) | Female 42-141 U/L | 5-2400 U/L |
| Alanine Aminotransferase (ALT) | 10-47 U/L | 5-2000 U/L |
| Aspartate Aminotransferase (AST) | 11-38 U/L | 5-2000 U/L |
| Total Bilirubin (TBIL) | 0.2-1.6 mg/dL | 0-1-30 mg/dL |
| Albumin (ALB) | 3.3-5.5 g/dL | 1-6.5 g/dL |
| Total Protein (TP) | 6.4-8.1 g/dL | 2-14 g/dL |