

## Acid-Base Interpreter App: Instructions Manual

This tool is designed to help clinicians rapidly interpret acid-base disorders using standard ABG and electrolyte inputs. It mirrors the logic of a full Google Sheets engine, including Winters formula, acute/chronic respiratory rules, anion gap correction, delta-delta analysis, and a Kassirer-Bleich validity check.

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### 1. Purpose of the App

The Acid-Base Interpreter provides a detailed, stepwise interpretation of:

- Primary acid-base disturbance
- Compensation (appropriate or inappropriate)
- Presence of mixed disorders
- Delta-delta analysis (when applicable)
- Anion gap with albumin correction
- Kassirer-Bleich validity warning when the ABG is unreliable

It is intended **only for clinical decision support** and should always be paired with clinical judgment.

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### 2. How to Use the App

#### Step 1 — Enter ABG Values

Input the following fields:

- **pH** (e.g., 7.32)
- **PCO<sub>2</sub>** in mmHg
- **HCO<sub>3</sub><sup>-</sup>** in mEq/L

#### Step 2 — Enter Electrolytes

- **Na<sup>+</sup>, Cl<sup>-</sup>, Albumin** (albumin defaults to 4.0 g/dL if unchanged)

#### Step 3 — Select Respiratory Time Course

Choose:

- **Acute**
- **Chronic**

This affects expected compensation for respiratory disorders.

#### Step 4 — Tap “Interpret”

- The button will visually press to confirm your input.
  - The interpretation displays immediately below.
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### 3. Understanding the Output

The results section includes:

#### A. Final Interpretation

- Primary disorder (e.g., *anion gap metabolic acidosis*)
- Compensation assessment (e.g., *with appropriate respiratory compensation*)
- Any secondary process (e.g., *concomitant respiratory alkalosis*)

#### B. Kassirer–Bleich Sanity Check

If the calculated hydrogen ion concentration from pH and from Kassirer–Bleich disagree significantly, a **red warning** appears:

"Kassirer–Bleich sanity check FAILED – interpret results with caution."

#### C. Details Section

Includes:

- Anion gap and corrected anion gap
  - $\text{H}^+$  from pH and  $\text{H}^+$  from Kassirer–Bleich
  - $\Delta\text{AG}$ ,  $\Delta\text{HCO}_3$ ,  $\Delta\Delta$  ratio (if applicable)
  - All classification steps used
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### 4. How to Save as an App on Your Phone

The app is a mobile-optimized web application. Saving it to your home screen makes it behave like a native app.

#### iPhone (Safari)

1. Open the app link in Safari.
2. Tap the **Share** icon.
3. Select **Add to Home Screen**.
4. Rename if desired → Tap **Add**.

#### Android (Chrome)

1. Open the app link in Chrome.
2. Tap the : (menu) button.
3. Tap **Add to Home Screen**.
4. Confirm by tapping **Add**.

After this, the app opens full-screen with its own icon—no browser bar.

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## 5. Best Practices

- Double-check extreme or implausible inputs.
  - Treat red Kassirer–Bleich warnings seriously.
  - Always integrate the interpretation with the clinical picture.
  - Re-measure the ABG when validity is uncertain.
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For feedback or updates, simply redeploy your index.html file to Netlify and refresh the home-screen app icon.