


**INE** | INSTITUTE OF  
NUTRITIONAL  
ENDOCRINOLOGY

## Blood Chemistry: Fluids and Electrolytes

Dr. Ritamarie Loscalzo

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**Medical Disclaimer:** The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

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## Fluids and Electrolytes

- **Sodium:** One of the major salts in the body fluid, sodium is important in the body's water balance and the electrical activity of nerves and muscles.
- **Chloride, Serum:** Similar to sodium, it helps to maintain the body's electrolyte balance.
- **Potassium:** Helps to control the nerves and muscles.
- **Carbon Dioxide (Bicarbonate):** Ordered as part of an electrolyte panel. The electrolyte panel is used to detect, evaluate, and monitor electrolyte imbalances.



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### Acid Alkaline

#### Acidosis

- ✓ Chloride +
- ✓ Potassium +
- ✓ Carbon Dioxide -

#### Alkalosis

- ✓ Chloride -
- ✓ Potassium -
- ✓ Carbon Dioxide +

The PH Scale

Acidic

Alkaline

0

1

2

3

4

5

6

7

8

9

10


11

12

13

14

Neutral



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### Electrolytes and Adrenals

#### Adrenal Fatigue


- ✓ Potassium +
- ✓ Sodium -
- ✓ Glucose -

#### Hyper Adrenal

- ✓ Potassium -
- ✓ Sodium +
- ✓ Glucose +
- ✓ Triglycerides +

| 3  | CATEGORIES       | Units  | PATHOLOGICAL RANGE |       | FUNCTIONAL RANGE |       | CURRENT<br>01/24/10 | Hypo<br>Adrenal |
|----|------------------|--------|--------------------|-------|------------------|-------|---------------------|-----------------|
|    |                  |        | Min                | Max   | Min              | Max   |                     |                 |
|    |                  |        |                    |       |                  |       |                     |                 |
| 14 | Sodium, serum    | mmol/L | 135.0              | 148.0 | 135.0            | 140.0 | 133                 |                 |
| 15 | Potassium, serum | mmol/L | 3.5                | 5.5   | 4.0              | 4.5   | 4.7                 |                 |

| 3  | CATEGORIES       | Units  | PATHOLOGICAL RANGE |       | FUNCTIONAL RANGE |       | 10/06/09 | 06/26/08 | 11/20/06 | Hyper<br>Adrenal |
|----|------------------|--------|--------------------|-------|------------------|-------|----------|----------|----------|------------------|
|    |                  |        | Min                | Max   | Min              | Max   |          |          |          |                  |
|    |                  |        |                    |       |                  |       |          |          |          |                  |
| 14 | Sodium, serum    | mmol/L | 135.0              | 148.0 | 135.0            | 140.0 | 139      | 139      | 143      |                  |
| 15 | Potassium, serum | mmol/L | 3.5                | 5.5   | 4.0              | 4.5   | 3.6      | 4.1      | 3.9      |                  |



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### Adrenal Fatigue Actions

- ✓ Stress management: meditation, yoga, HeartMath™, appreciation
- ✓ High green, vitamin and mineral rich diet
- ✓ Vitamin C rich foods or supplements: goji, acai, pomegranate, camu concentrates, greens, colorful fruits and veggies
- ✓ Activated forms of B vitamins, i.e. Premier Research Living source liquids
- ✓ Antioxidants
- ✓ Adaptogenic herbs – more later
- ✓ Zinc





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### Fluids and Electrolytes Case Analysis

|    |                      | Units  | PATHOLOGICAL RANGE |       | FUNCTIONAL RANGE |       |          |
|----|----------------------|--------|--------------------|-------|------------------|-------|----------|
|    | CATEGORIES           |        | Min                | Max   | Min              | Max   | 10/06/09 |
| 14 | Sodium_serum         | mmol/L | 135.0              | 148.0 | 135.0            | 140.0 | 142      |
| 15 | Potassium_serum      | mmol/L | 3.5                | 5.5   | 4.0              | 4.5   | 3.5      |
| 16 | Chloride_serum       | mmol/L | 99.0               | 111.0 | 100.0            | 106.0 | 105      |
| 17 | Carbon Dioxide_total | mmol/L | 19.0               | 31.0  | 25.0             | 30.0  | 23       |
| 18 | Calcium_serum        | mg/dL  | 8.7                | 10.5  | 9.2              | 10.1  | 10       |
| 19 | Phosphorus_serum     | mg/dL  | 2.3                | 4.8   | 3.5              | 4.0   | 3.9      |

- ❖ High sodium, low potassium seen in hyperactive adrenals
- ❖ Low carbon dioxide seen in metabolic acidosis
- ❖ Follow-up: address stress issues
- ❖ Adrenal Stress Test
- ❖ Alkaline diet high in fresh whole fruits and vegetables



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