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Diagnostic Testing: Algorithms, Nomograms, and Tables

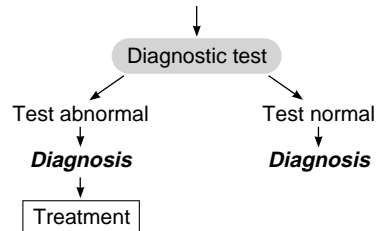
Stephen J. McPhee, MD, and Diana Nicoll, MD, PhD

HOW TO USE THIS SECTION

This section includes algorithms, nomograms, and tables, arranged alphabetically by subject, designed to be used in the selection and interpretation of appropriate laboratory tests.

A conventional algorithm layout is displayed below. Diagnostic tests are enclosed in ovals; diagnoses in italics; and treatment recommendations in rectangles.

SUSPECTED DIAGNOSIS/CLINICAL SITUATION



Abbreviations used throughout this section include the following:

- N = normal
- Abn** = abnormal
- Pos** = positive
- Neg** = negative
- Occ** = occasional
- ↑ = increased or high
- ↓ = decreased or low

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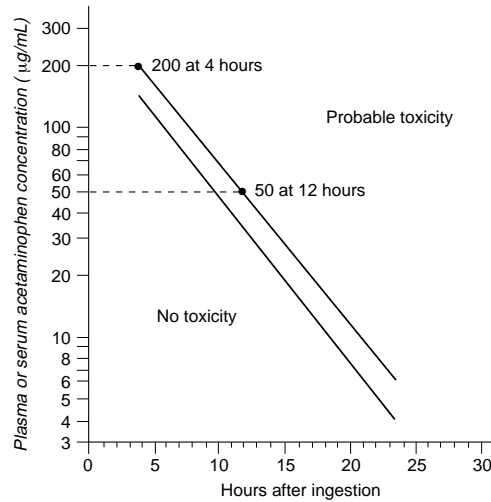


Figure 8-1. ACETAMINOPHEN TOXICITY: Nomogram for prediction of acetaminophen hepatotoxicity following acute overdose. The upper line defines serum acetaminophen concentrations known to be associated with hepatotoxicity; the lower line defines serum levels 25% below those expected to cause hepatotoxicity. To give a margin for error, the lower line should be used as a guide to treatment. (Modified and reproduced, with permission, from Rumack BH, Matthew H: Acetaminophen poisoning and toxicity. *Pediatrics* 1975;55:871. Reproduced by permission of *Pediatrics* Vol 55 page 873, Copyright © 1975. Permission obtained also from Saunders CE, Ho MT [editors]: *Current Emergency Diagnosis & Treatment*, 4th ed. Appleton & Lange, 1992.)

TABLE 8-1. ACID-BASE DISTURBANCES: LABORATORY CHARACTERISTICS OF PRIMARY SINGLE DISTURBANCES OF ACID-BASE BALANCE.¹

Disturbance	Acute Primary Change	Arterial pH	[K ⁺] (meq/L)	Anion Gap ² (meq)	Clinical Features
Normal	None	7.35–7.45	3.5–5.0	8–12	None.
Respiratory acidosis	P _{CO2} retention	↓	↑	N	Dyspnea, polypnea, respiratory outflow obstruction, ↑ anterior-posterior chest diameter, musical rales, wheezes. In severe cases, stupor, disorientation, coma.
Respiratory alkalosis	P _{CO2} depletion	↑	↓	N or ↓	Anxiety, breathlessness, frequent sighing, lungs usually clear to examination, positive Chvostek and Trousseau signs.
Metabolic acidosis	HCO ₃ ⁻ depletion	↓	↑ or ↓	N or ↑	Weakness, air hunger, Kussmaul respiration, dry skin and mucous membranes. In severe cases, poor skin turgor, coma, hypotension, death.
Metabolic alkalosis	HCO ₃ ⁻ retention	↑	↓	N	Weakness, positive Chvostek and Trousseau signs, hyporeflexia.

¹Reproduced, with permission, from Harvey AM et al (editors): The Principles and Practice of Medicine, 22nd ed. Appleton & Lange, 1988.

²Anion gap = [Na⁺] - ([HCO₃⁻] + [Cl⁻]) = 8–12 meq normally.

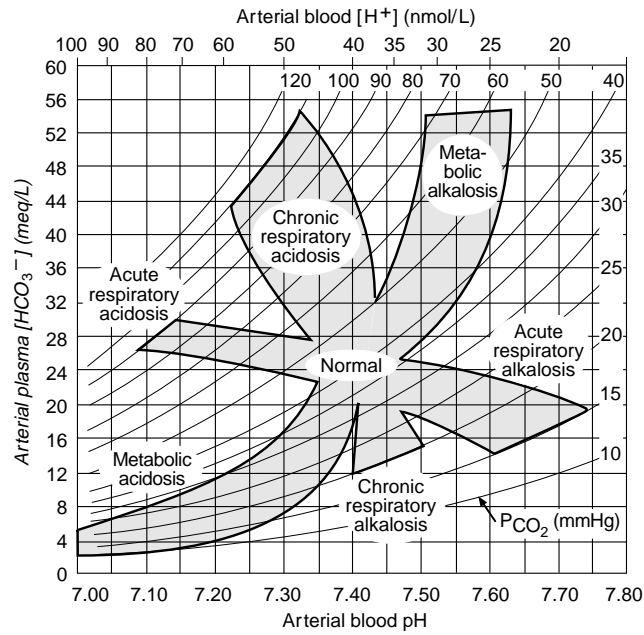


Figure 8-2. ACID-BASE NOMOGRAM: Shown are the 95% confidence limits of the normal respiratory and metabolic compensations for primary acid-base disturbances. (Reproduced, with permission, from Cogan MG (editor): *Fluid and Electrolytes: Physiology and Pathophysiology*. Appleton & Lange, 1991.)

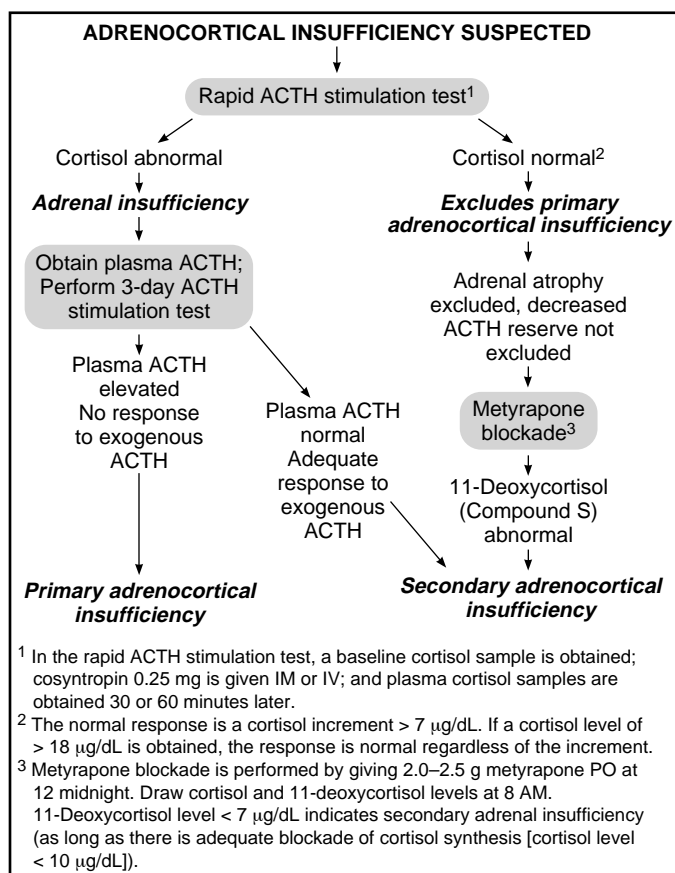


Figure 8-3. ADRENOCORTICAL INSUFFICIENCY: Laboratory evaluation of suspected adrenocortical insufficiency. ACTH = adrenocorticotrophic hormone. (Modified, with permission, from Baxter JD, Tyrrell JB: The adrenal cortex. In: *Endocrinology and Metabolism*, 3rd ed. Felig P, Baxter JD, Frohman LA [editors]. McGraw-Hill, 1995; and from Harvey AM et al: *The Principles and Practice of Medicine*, 22nd ed. Appleton & Lange, 1988.)