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Common Laboratory Tests: Selection and Interpretation

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HOW TO USE THIS SECTION

This section contains information about commonly used laboratory tests. It includes most of the blood, urine, and cerebrospinal fluid tests found in this book, with the exception of drug levels (Chapter 4). Entries are in tabular format and are arranged alphabetically.

Test/Reference Range/Collection

This first column begins with the common test name, the specimen analyzed, and any test name abbreviation (in parentheses).

Below this in the first column is the reference range for each test. The first entry is in conventional units, and the second entry (in [brackets]) is in SI units (*Système International d'Unités*). Any panic values for a particular test are placed here after the word "Panic." The reference ranges provided are from several large medical centers; consult your own clinical laboratory for those used in your institution.

This column also shows which tube to use for collecting blood and other body fluids, how much the test costs (in relative symbolism; see below), and how to collect the specimen. Listed below are the common collection tubes and their contents:

Tube Color	Tube Contents	Typically Used In
Lavender	EDTA	Complete blood count
Marbled	Serum separator	Serum chemistry tests
Red	None	Blood banking (serum)

(continued)

Tube Color	Tube Contents	Typically Used In
Blue	Citrate	Coagulation studies
Green	Heparin	Plasma studies
Yellow	Acid citrate	HLA typing
Navy	Trace metal free	Trace metals (eg, lead)

The scale used for the cost of each test is:

Approximate Cost	Symbol Used in Tables
\$1–20	\$
\$21–50	\$\$
\$51–100	\$\$\$
> \$100	\$\$\$\$

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Physiologic Basis

This column contains physiologic information about the substance being tested. Information on classification and biologic importance, as well as interactions with other biologic substances and processes, is included.

Interpretation

This column lists clinical conditions that affect the substance being tested. Generally, conditions with higher prevalence will be listed first. When the sensitivity of the test for a particular disease is known, it will follow the disease name in parentheses, eg, “rheumatoid arthritis (83%).” Some of the common drugs that can affect the test substance *in vivo* will also be included in this column.

Comments

This column sets forth general information pertinent to the use and interpretation of the test and important *in vitro* interferences with the test procedure. Appropriate general references are also listed.

Test Name

In the last column, the test name is placed perpendicularly to the rest of the table to allow for quick referencing.

Test/Range/Collection	Physiologic Basis	Interpretation	Comments
<p>ABO grouping, serum and red cells (ABO)</p> <p>Red \$</p> <p>Properly identified and labeled blood specimens are critical.</p>	<p>The four blood groups A, B, O, and AB are determined by the presence of antigens A and B or their absence (O) on a patient's red blood cells.</p> <p>Antibodies are present in serum in which red cells lack antigen.</p>	<p>In the US white population, 45% are type O, 40% A, 11% B, 4% AB.</p> <p>In the African-American population, 49% are type O, 27% A, 20% B, 4% AB.</p> <p>In the US Asian population, 40% are type O, 28% A, 27% B, 5% AB.</p> <p>In the Native American population, 79% are type O, 16% A, 4% B, < 1% AB.</p>	<p>For both blood donors and recipients, routine ABO grouping includes both red cell and serum testing, as checks on each other.</p> <p>Tube testing is as follows: patient's red cells are tested with anti-A and anti-B for the presence or absence of agglutination (forward or cell grouping), and patient's serum is tested against known A and B cells (reverse or serum grouping).</p> <p>Ref: <i>Technical Manual of the American Association of Blood Banks</i>, 11th ed. American Association of Blood Banks, 1993.</p>

ABO grouping

Test/Range/Collection	Physiologic Basis	Interpretation	Comments
<p>Acetaminophen, serum (Tylenol; others)</p> <p>10–20 mg/L [66–132 μmol/L] Panic: > 50 mg/L</p> <p>Marbled \$\$</p> <p>For suspected overdose, draw two samples at least 4 hours apart, at least 4 hours after ingestion. Note time of ingestion, if known. Order test stat.</p>	<p>In overdose, liver and renal toxicity are produced by the hydroxylated metabolite if it is not conjugated with glutathione in the liver.</p>	<p>Increased in: Acetaminophen overdose. Interpretation of serum acetaminophen level depends on time since ingestion. Levels drawn < 4 hours after ingestion cannot be interpreted since the drug is still in the absorption and distribution phase. Use nomogram (Figure 8–1, p 307) to evaluate possible toxicity. Levels > 150 mg/dL at 4 hours or > 50 mg/dL at 12 hours after ingestion suggest toxicity.</p>	<p>Do not delay acetylcysteine (Mucomyst) treatment (140 mg/kg orally) if stat levels are unavailable. Ref: Lancet 1971;1:519. Ref: Pediatrics 1975;55:871. Ref: Lancet 1976;2:109.</p>

Acetaminophen