

# Standard Laboratory Values

## Pregnant and Nonpregnant Women

Values	Nonpregnant	Pregnant
<b>Hematologic</b>		
Complete Blood Count (CBC)		
Hemoglobin, g/dL	12–16*	11.5–14*
Hematocrit, PCV, %	37–47	32–42
Red cell volume, mL	1600	1900
Plasma volume, mL	2400	3700
Red blood cell count, million/mm <sup>3</sup>	4–5.5	3.75–5.0
White blood cells, total per mm <sup>3</sup>	4500–10,000	5000–15,000
Polymorphonuclear cells, %	54–62	60–85
Lymphocytes, %	38–46	15–40
Erythrocyte sedimentation rate, mm/h	≤	30–90
MCHC, g/dL packed RBCs (mean corpuscular hemoglobin concentration)	30–36	No change
MCH (mean corpuscular hemoglobin per picogram)	29–32	No change
MCV/μm <sup>3</sup> (mean corpuscular volume per cubic micrometer)	82–96	No change
<b>Blood Coagulation and Fibrinolytic Activity†</b>		
Factors VII, VIII, IX, X		Increase in pregnancy, return to normal in early puerperium; factor VIII increases during and immediately after delivery
Factors XI, XIII		Decrease in pregnancy
Prothrombin time (protime)	60–70 sec	Slight decrease in pregnancy
Partial thromboplastin time (PTT)	12–14 sec	Slight decrease in pregnancy and again decrease during second and third stage of labor (indicates clotting at placental site)

(continued)

Values	Nonpregnant	Pregnant
Bleeding time	1–3 min (Duke) 2–4 min (Ivy)	No appreciable change
Coagulation time	6–10 min (Lee/White)	No appreciable change
Platelets	150,000 to 350,000/mm <sup>3</sup>	No significant change until 3–5 days after delivery, then marked increase (may predispose woman to thrombosis) and gradual return to normal
Fibrinolytic activity		Decreases in pregnancy, then abrupt return to normal (protection against thromboembolism)
Fibrinogen	250 mg/dL	400 mg/dL
<b>Mineral and Vitamin Concentrations</b>		
Serum iron, $\mu\text{g}$	75–150	65–120
Total iron-binding capacity, $\mu\text{g}$	250–450	300–500
Iron saturation, %	30–40	15–30
Vitamin B <sub>12</sub> , folic acid, ascorbic acid	Normal	Moderate decrease
<b>Serum protein</b>		
Total, g/dL	6.7–8.3	5.5–7.5
Albumin, g/dL	3.5–5.5	3.0–5.0
Globulin, total, g/dL	2.3–3.5	3.0–4.0
<b>Blood sugar</b>		
Fasting, mg/dL	70–80	65
2-hour postprandial, mg/dL	60–110	Under 140 after a 100-g carbohydrate meal is considered normal
<b>Cardiovascular</b>		
Blood pressure, mm Hg	120/80 <sup>†</sup>	114/65
Peripheral resistance, dyne/s · cm <sup>-5</sup>	120	100
<b>Venous pressure, cm H<sub>2</sub>O</b>		
Femoral	9	24
Antecubital	8	8
Pulse, rate/min	70	80
Stroke volume, mL	65	75
Cardiac output, L/min	4.5	6
Circulation time (arm-tongue), sec	15–16	12–14
<b>Blood volume, mL</b>		
Whole blood	4000	5600
Plasma	2400	3700
Red blood cells	1600	1900
Plasma renin, units/L	3–10	10–80
<b>Chest x-ray studies</b>		
Transverse diameter of heart	—	1–2 cm increase
Left border of heart	—	Straightened
Cardiac volume	—	70-mL increase
<b>Electrocardiogram</b>		
V <sub>1</sub> and V <sub>2</sub>	—	15° left axis deviation
kV <sub>4</sub>	—	Inverted T-wave
III	—	Low T
aVr	—	Q + inverted T
		Small Q

Values	Nonpregnant	Pregnant
<b>Hepatic</b>		
Bilirubin total	Not more than 1 mg/dL	Unchanged
Cephalin flocculation	Up to 2+ in 48 h	Positive in 10%
Serum cholesterol	110–300 mg/dL	↑ 60% from 16–32 weeks of pregnancy; remains at this level until after delivery
Thymol turbidity	0–4 units	Positive in 15%
Serum alkaline phosphatase	2–4.5 units (Bodansky)	↑ from week 12 of pregnancy to 6 weeks after delivery
Serum lactate dehydrogenase		Unchanged
Serum glutamic-oxaloacetic transaminase		Unchanged
Serum globulin albumin	1.5–3.0 g/dL 4.5–5.3 g/dL	↑ slight ↓ 3.0 g by late pregnancy
A/G ratio		Decreased
α <sub>2</sub> -globulin		Increased
β-globulin		Increased
Serum cholinesterase		Decreased
Leucine aminopeptidase		Increased
Sulfobromophthalein (5 mg/kg)	5% dye or less in 45 min	Somewhat decreased
<b>Renal</b>		
Bladder capacity	1300 mL	1500 mL
Renal plasma flow (RPF), mL/min	490–700	Increase by 25%, to 612–875
Glomerular filtration rate (GFR), mL/min	105–132	Increase by 50%, to 160–198
Nonprotein nitrogen (NPN), mg/dL	25–40	Decreases
Blood urea nitrogen (BUN), mg/dL	20–25	Decreases
Serum creatinine, mg/kg/24 hr	20–22	Decreases
Serum uric acid, mg/kg/24 hr	257–750	Decreases
Urine glucose	Negative	Present in 20% of gravidas
Intravenous pyelogram (IVP)	Normal	Slight to moderate hydroureter and hydronephrosis; right kidney larger than left kidney
<b>Miscellaneous</b>		
Total thyroxine concentration	5–12 μg/dL thyroxine	↑ 9–16 μg/dL thyroxine (however, unbound thyroxine not greatly increased)
Ionized calcium		Relatively unchanged
Aldosterone		↑ 1 mg/24 hr by third trimester
Dehydroisoandrosterone	Plasma clearance 6–8 L/24 hr	↑ plasma clearance tenfold to twentyfold

\* At sea level. Permanent residents of higher levels (e.g., Denver) require higher levels of hemoglobin.

From Scott, J. R., et al. (2000). *Obstetrics and gynecology*. Philadelphia: Lippincott Williams & Wilkins.

† Pregnancy represents a hypercoagulable state.

‡ For the woman about 20 years of age.

10 years of age: 103/70.

30 years of age: 123/82.

40 years of age: 126/84.