

KEY FACTS IN ANAESTHESIA AND INTENSIVE CARE

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NORMAL VALUES

BIOCHEMISTRY

	Normal range
Blood: Urea and electrolytes	
Sodium	132–142 mmol/L
Potassium	3.4–5 mmol/L
Bicarbonate	22–30 mmol/L
Glucose	3.5–7 mmol/L
Urea	<7.5 mmol/L
Creatinine	35–125 μ mol/L
Chloride	95–106 mmol/L
Osmolality	280–300 mosmol/kg
Liver function tests	
Total protein	63–83 g/L
Albumin	30–44 g/L
Bilirubin	2–17 μ mol/L
Alkaline phosphatase	30–135 U/L
Alanine aminotransferase	7–40 U/L
Total calcium	2.2–2.6 mmol/L
Ionised calcium	1.18–1.30 mmol/L
Phosphate	0.8–1.4 mmol/L
Zinc	12–23 μ mol/L
Magnesium	0.7–1.0 mmol/L
Arterial blood gases	
Hydrogen ion	36–45 nmol/L
pH	7.36–7.44
$P_a\text{CO}_2$	4.7–6 kPa
$P_a\text{O}_2$	9.3–14 kPa
Base excess	$\pm$ 2.5 mmol/L
Standard bicarbonate	21–25 mmol/L
Urine	
Sodium	50–200 mmol/24 h
Potassium	20–60 mmol/24 h

Continued

BIOCHEMISTRY (continued)

	Normal range
Urea	330–500 mmol/24 h
Creatinine	9–16 mmol/24 h
Protein	<0.1 g/24 h
Creatinine clearance	90–120 mL/min
Osmolality	300–1200 mosmol/kg

HAEMATOLOGY

	Normal range
Haemoglobin	
Men	14.0–17.0 g/dL
Women	11.5–16.0 g/dL
Platelet count	150–300 × 10 ⁹ /L
White cell count (WCC)	4.0–11 × 10 ⁹ /L
Differential white counts	
Neutrophils	2.0–7.5 × 10 ⁹ /L (40–75% of WCC)
Lymphocytes	1.5–4.4 × 10 ⁹ /L (20–40% of WCC)
Monocytes	0.2–0.8 × 10 ⁹ /L (2–10% of WCC)
Eosinophils	0.04–0.4 × 10 ⁹ /L (1–6% of WCC)
Basophils	<0.1 × 10 ⁹ /L (<1% of WCC)
Prothrombin time (PT)	<2 s above control
Kaolin partial thromboplastin time (KPTT)	<7 s above control
Fibrinogen	1.5–4.0 g/L
Fibrin-degradation products (FDPs)	<0.5 mg/L

USEFUL CALCULATED VALUES

Osmolality

Plasma:

$$\text{osmolality (mosmol/kg)} = [2 \times (\text{Na} + \text{K})] + \text{urea} + \text{glucose}$$

Urine:

$$\text{osmolality (mosmol/kg)} = [2 \times (\text{Na} + \text{K})] + \text{urea} - 10$$

Creatinine clearance

$$\text{Creatinine clearance (mL/min)} = \frac{\text{Urine creatinine (mmol/24 h)} \times 694}{\text{Plasma creatinine } (\mu\text{mol/L})}$$

Nitrogen balance

$$\begin{aligned} \text{Nitrogen output (g/24 h)} = & (\text{urine urea} \times 0.035) \\ & + (\Delta \text{ plasma urea} \times \text{body weight (kg)} \times 0.046) \end{aligned}$$

where Δ plasma urea is the difference between one day's result and the previous day's.