

# Blood Collection Guidelines

The volume of blood collected from an animal surviving (non-terminal) the collection is limited to prevent adverse side effects. If too much blood is drawn too quickly or too frequently without replacement, animals may develop hypovolemic shock. In the longer term, the removal of too much blood causes anemia, muscle weakness, increased susceptibility to cold and reduced exercise tolerance.

**As a general guide, no more than 10% of circulating blood volume may be collected during any 14 day period from an animal surviving the blood collection.** The appropriate frequency of blood collection is dependent upon the volume collected. If the maximum volume is collected within a 24 hour period, blood may be collected once every two weeks. The monitoring of hematocrit, serum protein levels, and potentially replacement fluid therapy are indicated when more frequent and/or higher volume collections are scientifically necessary; however, scientific justification is required. See Tables for specific blood collection amounts.

There is no limitation on the volume of blood that may be collected during a terminal procedure.

# Blood Collection Guidelines

**Table 1: Approximate blood volumes and recommended maximum blood sample volumes for species of given body weights**

Species	Weight	Total Blood Volume (ml)	7.5% (ml)	10% (ml)
Mouse	25 g	1.8	0.1	0.2
Rat	250 g	16.0	1.2	1.6
Rabbit	4 kg	224	17	22

**Table 2: Approximate Blood Sample Volumes Ranges Guide for Mice & Rats (NIH)**

Body weight (g)	*CBV(ml)	1% CBV (ml) every 24 hrs†	7.5% CBV (ml) every 7 days†	10% CBV (ml) every 2 - 4 wks†
20	1.10 - 1.40	.011 - .014	.082 - .105	.11 - .14
25	1.37 - 1.75	.014 - .018	.10 - .13	.14 - .18
30	1.65 - 2.10	.017 - .021	.12 - .16	.17 - .21
35	1.93 - 2.45	.019 - .025	.14 - .18	.19 - .25
40	2.20 - 2.80	.022 - .028	.16 - .21	.22 - .28
125	6.88 - 8.75	.069 - .088	.52 - .66	.69 - .88
150	8.25 - 10.50	.082 - .105	.62 - .79	.82 - 1.0
200	11.00 - 14.00	.11 - .14	.82 - 1.05	1.1 - 1.4
250	13.75 - 17.50	.14 - .18	1.0 - 1.3	1.4 - 1.8
300	16.50 - 21.00	.17 - .21	1.2 - 1.6	1.7 - 2.1
350	19.25 - 24.50	.19 - .25	1.4 - 1.8	1.9 - 2.5
*Circulating blood volume		†Maximum sample volume for that sampling frequency		

**Table 3. Limit volumes and recovery periods**

Single sampling		Multiple sampling	
Circulatory Blood Volume Removed (%)	Approximate recovery period	Circulatory Blood Volume Removed in 24 hrs (%)	Approximate recovery period
7.5%	1 week	7.5%	1 week
10%	2 weeks	10-15%	2 weeks
15%	4 weeks	20%	3 weeks

A Good Practice Guide to the Administration of Substances and Removal of Blood, Including Routes and Volumes, Diehl, et.al., Journal of Applied Toxicology, 21, 15–23 (2001)