Infusion Rate Calculator

Weight	Approximate daily maintenance (mL/day) (60mL/kg/day if < 30kg; 40mL/kg/day if >30kg)	Replacement volume dehydration in mL (% Dehydration)					Infusion rate (mL/hr) To provide maintenance requirements and replace dehydration over 24 hours		Infusion volume (mL) for rapid correction of hypovolemia ("Shock Doses") Dose to be given over 15 minutes to 1 hour dependent on severity of shock. Assess patient continuously during infusion.	
		5%	7%	10%	12%	15%	Dehydration 5%	Dehydration 10%	50mL/kg (use in dogs & cats)	80mL/kg (for use in dogs ONLY)
1kg	60	50	70	100	120	150	5	7	50	80
2kg	120	100	140	200	240	300	9	13	100	160
3kg	180	150	210	300	360	450	14	20	150	240
4kg	240	200	280	400	480	600	18	27	200	320
5kg	300	250	350	500	600	750	23	33	250	400
10kg	600	500	700	1000	1200	1500	46	67	500	800
15kg	900	750	1050	1500	1800	2250	69	100	750	1200
20kg	1200	1000	1400	2000	2400	3000	92	133	1000	1600
25kg	1500	1250	1750	2500	3000	3750	115	167	1250	2000
30kg	1800	1500	2100	3000	3600	4500	138	200	1500	2400
35kg	1400	1750	2450	3500	4200	5250	131	204	1750	2800
40kg	1600	2000	2800	4000	4800	6000	150	233	2000	3200
50kg	2000	2500	3500	5000	6000	7500	188	292	2500	4000
60kg	2400	3000	4200	6000	7200	9000	225	350	3000	4800

Courtesy of Dez Hughes, BVSc, MRCVS, Dip AVECC

Calculating fluid requirements: Maintenance + Hydration deficit + Ongoing losses
1. Maintenance requirements: (40-60mL/kg/day)
Note: this includes normal urine output (sensible losses) and insensible losses through respiration, skin, & feces.
2. Hydration deficit: Body weight (kg) x % of dehydration as a decimal = deficit in liters
3. Contemporary (ongoing) losses: e.g. vomiting, diarrhea, polyuria

DRIP RATE	
ADULT SET (10 drops/mL)	**PEDIATRIC SET** (60 drops/mL)
(mL/hr)/6 = drops/min	ml/hr = drops/min

PHYSICAL FINDINGS IN DEHYDRATION	
PERCENT DEHYDRATION	**CLINICAL SIGNS**
<5	Not detectable
5-6	Subtle loss of skin elasticity
6-8	Definite delay in return of skin to normal position Eyes possibly sunken in orbits Possibly dry mucous membranes
10-12	Tented skin stands in place Eyes sunken in orbits Dry mucous membranes
12-15	As above, plus signs of shock (tachycardia, cool extremities, rapid and weak pulses, prolongation of CRT). Death may be imminent.

COMBINED INTERPRETATION OF PCV AND TS/TP		
PCV(%)	**TS / TP**	**INTERPRETATION OF PCV AND TS/TP**
↑	↑	DEHYDRATION
↑	N or ↓	Splenic contraction; polycythemia; DEHYDRATION + hypoproteinemia
N	↑	Hyperglobulinemia; anemia + dehydration
N	N	Normal; DEHYDRATION + anemia + hypoproteinemia; acute hemorrhage
↓	N	Anemia (non-blood loss) + normal hydration
↓	↑	Anemia; DEHYDRATION; anemia + hypoproteinemia
↓	↓	Blood loss; anemia + hypoproteinemia; overhydration

Dechra Veterinary Technical Services 24 hr. support available at:
(866) 933-2472 or contact us at support@dechra.com for non-urgent questions or concerns.

Setting up an administration set

1. Prior to opening the protective outer bag, check for leaks and damage. Make sure the fluid is clear and the expiration date hasn't passed already. Double check it is the correct fluid to be administered.
2. Warm the fluid bag to body temp, if desired.
3. Remove the outer protective sleeve from the bag.
4. If any medication is to be added to the bag:
   -Check that medication is compatible.
   -Clean injection port with alcohol. Insert needle and syringe (with medication) and inject into fluid.
5. Thoroughly mix the medication and fluid.
6. Insert the spike on administration set into the fluid bag.
7. Squeeze chamber on administration set until half full. Allow fluid to run through administration set to the end to remove air bubbles. Close control flow mechanism on administration set.
8. Vetivex fluid is now ready to be administered intravenously to the patient.
9. Infusion rate to be calculated as to patient's requirements.
   -Make sure any unused fluid is discarded.
   -Vetivex is single use only.
10. Patients should be re-evaluated periodically to assess for any change in their fluid needs. The faster the administration rate, the more often they must be evaluated.
11. Early signs of overhydration include:
   -Serous nasal discharge
   -Nausea and/or vomiting
   -Restlessness
   -Increased respiratory rate/effort
   -Increased heart rate
   -Polyuria (if kidney function is normal)

VETIVEX™

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OOPO-VET50049-0316

VETIVEX™
Hartmann's Solution for Injection

For Animal Use Only
Description: Hartmann's Solution is a sterile, nonpyrogenic solution for fluid and electrolyte replenishment in single dose containers for parenteral administration. It contains no antimicrobial agents.

Each 100 ml of solution contains:

Sodium chloride	600 mg
Sodium lactate	317 mg
Potassium chloride	40 mg
Calcium chloride dihydrate	27 mg

Electrolyte concentrations	mmol/L	mEq/L
Sodium	131	131
Potassium	5	5
Calcium	2	4
Chloride	111	111
Lactate	29	29

Clinical Pharmacology: Hartmann's Solution has value as a source of water and electrolytes. It is capable of inducing diuresis depending on the clinical condition of the patient.

Hartmann's Solution produces a metabolic alkalinizing effect. Lactate ions are metabolized ultimately to carbon dioxide and water, which requires the consumption of hydrogen cations.

Indications and Usage: Hartmann's Solution is indicated as a source of water and electrolytes or as an alkalinizing agent.

Warnings: Do not administer to horses by intraperitoneal injection.

Hartmann's Solution should be used with great care, if at all, in patients with congestive heart failure, severe renal insufficiency, and in clinical states in which there exists edema with sodium retention.

Hartmann's Solution should be used with great care, if at all, in patients with hyperkalemia, severe renal failure, and in conditions in which potassium retention is present.

Hartmann's Solution should be used with great care in patients with metabolic or respiratory alkalosis. The administration of lactate ions should be done with great care in those conditions in which there is an increased level or an impaired utilization of these ions, such as severe hepatic insufficiency.

Hartmann's Solution should not be administered simultaneously with blood through the same administration set because of the likelihood of coagulation.

The parenteral administration of Hartmann's Solution can cause fluid and/or solute overloading resulting in dilution of serum electrolyte concentrations, overhydration, congested states, or pulmonary edema. The risk of dilutional states is inversely proportional to the electrolyte concentrations of the injections. The risk of solute overload causing congested states with peripheral and pulmonary edema is directly proportional to the electrolyte concentrations of the injections.

In patients with diminished renal function, administration of Hartmann's Solution may result in sodium or potassium retention.

Hartmann's Solution is not for use in the treatment of lactic acidosis.

Adverse Reactions: Reactions which may occur because of the solution or the technique of administration include febrile response, infection at the site of injection, venous thrombosis or phlebitis extending from the site of injection, extravasation, and hypervolemia. If an adverse reaction does occur, discontinue the infusion, evaluate the patient, institute appropriate therapeutic countermeasures, and save the remainder of the fluid for examination if deemed necessary.

Precautions: Clinical evaluation and periodic laboratory determinations are necessary to monitor changes in fluid balance, electrolyte concentrations, and acid base balance during prolonged parenteral therapy or whenever the condition of the patient warrants such evaluation.

Hartmann's Solution must be used with caution. Excess administration may result in metabolic alkalosis.

Do not administer unless solution is clear and seal is intact.

Reactions which may occur because of the solution or the technique of administration include febrile response, infection at the site of injection, venous thrombosis or phlebitis extending from the site of injection, extravasation, and hypervolemia.

If an adverse reaction does occur, discontinue the infusion, evaluate the patient, institute appropriate therapeutic countermeasures, and save the remainder of the fluid for examination if deemed necessary.

Dosage and Administration: As directed by a veterinarian. Dosage is dependent upon the age, weight and clinical condition of the patient as well as laboratory determinations.

Parenteral drug products should be inspected visually for particulate matter and discoloration prior to administration whenever solution and container permit.

All solutions for injection contained in plastic containers are intended for administration using aseptic technique.

Additives may be incompatible. Complete information is not available. Those additives known to be incompatible should not be used. Consult with pharmacist, if available. If, in the informed judgment of the veterinarian, it is deemed advisable to introduce additives, use aseptic technique. Mix thoroughly when additives have been introduced.
Do not store solutions containing additives. Discard unused portion.

Overdosage: In an event of overhydration or solute overload, re-evaluate the patient and institute appropriate corrective measures. See Warnings, Adverse Reactions and Precautions.

How Supplied: Hartmann's Solution is supplied as:

NDC Code	Volume
17033-482-01	1000 ml
17033-482-05	5000 ml

STORAGE: Exposure of pharmaceutical products to heat should be minimized. Avoid excessive heat. It is recommended the product be stored at room temperature (25° C); brief exposure up to 40°C does not adversely affect the product.

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

TAKE TIME  OBSERVE LABEL DIRECTIONS

DISTRIBUTED BY:
Dechra Veterinary Products
7015 College Boulevard, Suite 525
Overland Park, KS 66211

Made in Northern Ireland.

For a copy of the Material Safety Data Sheet (MSDS) or to report adverse reactions call Dechra Veterinary Products at (866) 933-2472.

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