

## Calf Electrolyte Fluid Therapy

### How much fluid does a healthy calf require each day?

5-10% of the calf's body weight is required each day (i.e. a day old **45kg** calf requires 2.25-4.5L/day; **60kg** calf 3-6L/day). The majority of this fluid is consumed as milk, however it is critical that fresh water be offered at all times from day 1.

### How much fluid does a calf lose when it is scouring?

A calf can lose approximately 2-4L of fluid per day (according to the severity of scour). The amount of fluid lost is directly related to the degree of dehydration of the calf. The degree of dehydration can be assessed by the following table:

**Table 1.** Assessing dehydration in scouring calves

<i>Degree of dehydration</i>	<i>Demeanour/ Alertness</i>	<i>Gap between eye and socket</i>	<i>Mucous Membranes</i>	<i>Skin Tenting/ Standing (Seconds)</i>
<5%	<i>Normal</i>	<i>None</i>	<i>Moist</i>	<i>Less than 1 second</i>
6-8%	<i>Slightly depressed</i>	<i>2-4mm</i>	<i>Moist-Dry</i>	<i>1-2 seconds</i>
8-10%	<i>Depressed</i>	<i>4-6mm</i>	<i>Dry</i>	<i>2-5 seconds</i>
10-12%	<i>Comatose</i>	<i>6-8mm</i>	<i>Dry</i>	<i>5-10 seconds</i>
<i>Greater than 12%</i>	<i>Comatose/Near death</i>	<i>8-12mm</i>	<i>Dry and cold</i>	<i>Greater than 10 seconds</i>

### How much fluid does the calf need to have to correct the loss from scours?

From the Table 1 the degree of dehydration can be calculated. Knowing the percent allows a fairly accurate idea on how much fluid is required **IN EXCESS** of daily requirements. Only about 60-80% of the oral fluids consumed will be absorbed into the blood stream, therefore the dehydration calculations need to be increased by 20-40%. (i.e., if a 40kg calf is assessed to be 10% dehydrated, it needs 2-4L of maintenance fluid, plus 5-6L of electrolytes, a total of approximately 7-10L of fluid per day whilst scouring badly)

### Should the calf remain on milk?

A calf should remain on milk if it is still bright, fairly active and willing to drink. The important factor is the inclusion of electrolytes between milk feeds to prevent the dehydration and acidosis that will lead to deterioration in the calf.

If the calf is already looking dull then it is worth taking the calf off milk for up to 24hrs and replacing it with electrolytes (remember the volumes calculated above). These feeds should be smaller volume, frequent feeds. Obviously this is very time consuming so it is a good idea to have one person dedicated to the task if possible. Milk should be reintroduced 24hrs later in small volumes, fed at frequent intervals (i.e. 1L of milk fed 2-3 times daily). Electrolyte feeds need to be continued whilst scouring persists (and fluid loss is occurring through the scour).

“The primary goal of treatment is to save the calf, not necessarily decrease the volume of diarrhoea.”

### **What type of fluid is the best?**

The aim of fluid therapy is to replace the water and electrolytes that are lost in the scour. The solutions must have adequate buffers to correct the acidosis, and adequate energy for absorption of fluids from the intestines.

Different brands are available, however it is very important to realise that not all electrolyte products on the market fit these criteria, in fact many are far from it.

There are 4 products which contain the recommended values:

1) VetraLYTE ZB, 2) Bovelyte 3) Megalyte Plus. Diarrest is also very close to the recommended values.

### **Can I mix the electrolytes with the milk?**

**With most electrolyte products the answer is NO.** The electrolyte interferes with the milk clotting mechanism in the abomasum and prevents a clot from forming, therefore interfering with digestion of milk protein. Nutrients are no longer available to the calf and scours will continue. Due to this, electrolytes and milk must not be fed within 2 hours of each other.

The exception is VetraLYTE ZB. VetraLYTE ZB is used in a similar manner to other electrolyte product. However, it may be used within 2 hours of a milk feed and is ideal for use in beef calves that remain with their mother and may still drink from her. This product can be added to whole milk, however best practice would be to provide electrolyte solutions as separate feeds from milk.

### **What if the calf won't suck?**

Stomach tubing is effective if done carefully. If the calf is unable to stand then intravenous fluids administered by a vet are required. These can assist in replacing the fluid deficit immediately and can have a dramatic effect.

### **When do you need to call a vet to a dehydrated calf?**

A calf that is lying down on it side and/or comatose is likely to be severely dehydrated and acidotic and ideally need sodium bicarbonate intravenously fairly quickly. This would need to be done by a veterinarian.

If a calf has lost its sucking reflex and is unable to rise but is not flat out, it is up to you but if the calf is worth something, intravenous fluid therapy earlier rather than later is a good idea.