

Fluid therapy in cattle

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Water helps to

- Transport nutrients, hormone
- Aid in temperature
- Regulate blood osmotic pressure
- Produce milk and saliva
- Eliminate waste products

Economic importance : heat stress

- Reduces feed intake @ 0.23 kg/day for each unit increase
- Milk production - 1 kg for each degree C rise
- 2 % loss of the total milk production in India
- During hot and humid season, milk production decrease --- 50 %.
- Animals with higher level of production are more sensitive to heat stress.

Economic importance

- Productive cattle
- Pregnant cow
- Calf
- Fluid
- Mortality

Water requirements for a day

Cows, Dry and Bred	6-15
Cows, Nursing	11-18
Bulls	7-19
Growing Cattle	4-15
Dairy Cattle	15-30
Sheep and Goats	2-3
Horses	10-15

Water requirements

$$\begin{aligned} \text{WR} = & \mathbf{35.25} + \mathbf{1.58} \times \text{DM intake} \\ & + \mathbf{0.9} \times \text{milk yield (pounds/ day)} \\ & + \mathbf{0.11} \times \text{sodium intake (gm/day)} \\ & + 2.65 \times \text{weekly mean min temp } (* F/1.8 - 17.78) \end{aligned}$$

NRC cattle, 2001



Unit : Fluid therapy in cattle

Lesson : 1

Fluid distribution in body and Diagnosing dehydration

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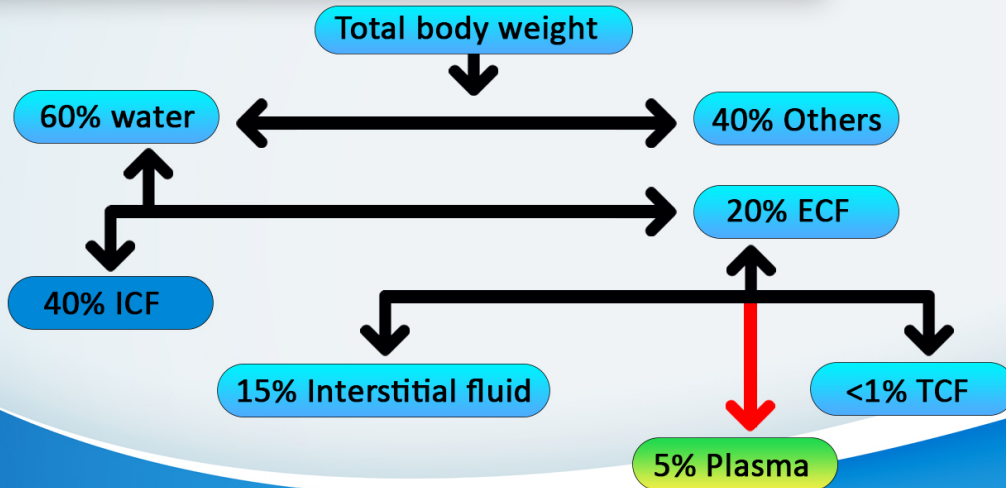
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Fluid distribution in body Assessment of dehydration



Take Home Points

$$\begin{aligned}\text{Total deficit} &= \text{TD} \\ \text{ECF} &= \text{TD} \times \frac{1}{3} \\ \text{PLASMA} &= \text{ECF} \times \frac{1}{4} \\ \text{OR} &= (\text{TD} \times \frac{1}{3}) \times \frac{1}{4} \\ &= \text{TD} \times \frac{1}{12}\end{aligned}$$


Sunken eye ball



Skin Tent Test



Please COUNT as

- 1000-1
- 1000-2
- 1000-3
- 1000-4
-

Assessment of dehydration

- <5 % : Not detectable
- 5-6% : Subtle loss of skin elasticity
- 6-8 % : Marked loss of skin elasticity (2-4")
CRT (2- 3"), Pink hardy sticky mm
- 8-10% : Tented skin stands in place (5")
CRT (4-5"), enophthalmos, dry mm

(Lisboa, 2004; Smith, 2009)

Assessment of dehydration

- 10-12% : Low skin elasticity (6-10"), CRT (6-8"), marked enophthalmos, dry mm
-
- 12-15% : Low skin elasticity (20"), CRT (>8"), enophthalmos, dry mm (with white or blue), early shock, moribund, death imminent

(Lisboa, 2004; Smith, 2009)

Dehydration in calves

% Dehydration	Eyeball Status	Skin Tent (in seconds)	Mucus membranes
0	None	<1	Moist
1-5	None to Slight	1-4	Moist
6-8	Slight Separation	5-10	Tacky
9-10	<5 mm gap	11-15	Tacky to dry
11-12	5-10 mm gap	16-45	Dry

Compiled from Howard, Smith, Blood et. al.

Laboratory analysis

	PCV	TS	pH
Normal	30-40	6-7.5	7.35-7.45
Need FT	50-60	8-10	7.20-7.30
Unfavorable	>60	>12	7.00-7.10

Dehydration in calves

- Dehydration = **degree of eye recession into the orbit in mm x 1.6**

Dehydration in calves





Thank you