

1 Fluids

- more...

2 concentrated ions

- potassium chloride
- bicarbonate
- calcium (boro) gluconate
- magnesium hypophosphite
- magnesium sulphate

3 potassium

- hypokalaemia
 - give KCl
 - dilute before use
 - label bag
- hyperkalaemia
 - correct acidosis
 - soluble insulin in 5% dextrose
 - (calcium borogluconate)

4 additives

5 potassium

- hypokalaemia
 - give KCl
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6 acidosis

- sodium bicarbonate solution
- incompatible with Hartmann's

- avoid (relative) overdose

7 bicarb

- estimate / measure base excess
- estimate blood volume
- calculate BE in blood
- give this much bicarb
- reassess

8 What would you do?

- 500kg TB with colic
- severely depressed and shocked

9 haematology

- PCV 65%
- arterial BE -10mM

10 treatment

- fluids then
- surgery

11 fluids

- Hartmann's / saline
- colloid
- bicarbonate

12 bicarb dose

- 500kg horse, BE -10mM
- blood volume 50L
- therefore needs $50 \times 10 = 500\text{mmol}$ to correct blood BE
- = 500mL 8.4% NaHCO_3^-
- = 833mL 5%

13 parenteral nutrition

- lipid emulsions
- amino acid solutions

- propylene glycol
- propionate
- glycerol

14 parenteral nutrition

- lipid emulsions
- aminoacid solutions
- not glucose

15 problems

- central catheterisation
- phlebitis
- sterility
- cost
- avoid

16 ruminants

- metabolic disturbances common
- prevention is better than cure!

17 ketosis

- glucose precursors
 - propylene glycol
 - propionate
 - glycerol
- glucocorticoids

18 hypocalcaemia

- milk fever
- eclampsia
- oxalate poisoning

19 milk fever

- calcium salts
 - 1mg calcium =

- 11.2mg calcium gluconate =
- 13.2mg calcium borogluconate
- compound Ca / Mg / P salts
- vitamin D

20 calcium

- slow iv
- care with sc injections
 - vasoconstriction
 - very slow absorption
 - danger of ischaemic necrosis
 - NEVER in dogs & cats

21 hypomagnesaemia

- prevent with Mg po
 - ruminal bolus
 - calcined magnesite on pasture
 - etc etc
- compound Ca/Mg/P iv
- magnesium sulphate sc not iv

22 trace elements

- only a trace needed
- beware toxicity, esp Se

23 oral fluids

24 oral fluids

- Na⁺, K⁺, Cl⁻
- glucose or glycine
- bicarbonate precursors
- (starch)
- tap water

25

26 bicarb precursors

- propionate – 1 HCO₃⁻
- citrate – 3 HCO₃⁻
- acetate – 1 HCO₃⁻

27 starches

- metabolised to glucose

28 water

- need not be sterile
- solution must be slightly hypotonic

29 indications

- diarrhoea
 - especially neonatal animals
- water deprivation

30 contra-indications

- vomiting
- gut obstruction
- severe electrolyte imbalances
- shock

31 administration

- allow to drink
- drench with bottle
- stomach tube
- pharyngostomy tube

32 dose

- ad libitum
- little and often

33 weaner piglet

- diarrhoea for several days
- temp 39°C

- eyes sunken
- 34 problems
 - water loss
 - ion loss
- 35 treatment
 - oral fluids
 - not antibiotics
- 36 What would you do?
 - 5 week old Rottweiler pup
 - severe vomiting & diarrhoea for 3 days
 - temperature 37 °C
 - panting
 - anuria
 - anorexia
- 37 problems
 - parvovirus infection
 - gut mucosal damage
 - water loss
 - ion loss
- 38 treatment
 - Hartmann's iv
 - colloids?
 - antibiotics?
 - antiemetics?
 - nutrition?
 - infection control!!!
- 39 fluids
 - use oral fluids rather than iv where possible
 - avoid parenteral nutrition – use pharyngostomy tube

- prevent metabolic disease in ruminants rather than wait and try to cure it