Renal Vignettes – acid base balance

Reduced Extra Cellular Fluid Volume (ECFV) Induces Alkalosis

HUMAN vignettes are brief, highly targeted exercises aimed at reinforcing single basic physiological points. A fuller more open ended exercise in acid-base balance can be found in the Acid-Base Balance exercise link on this same page.

Renal cell ion counter and co-transport pumps usually perform multiple functions. Below you investigate the effect of lowering ECFV and its consequent Na pump reabsorption upregulation on a acid-base balance. ECF volume is reduced isotonically via hemorrhage.

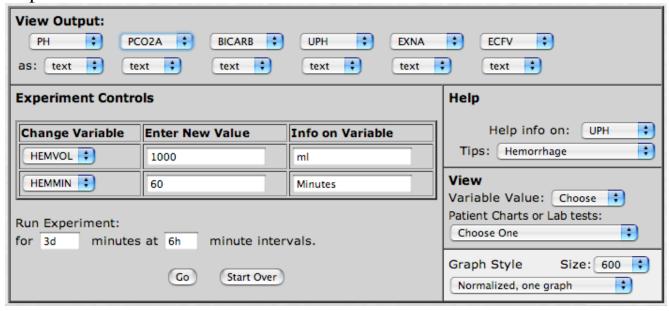
a) Set tables under view Output: for acid-base and renal output monitoring

PH, PCO2A, BICARB, UPH, EXNA, ECFV (note: look each of these up in Help info on:) In Patient Charts .. on *each* run ask for a Kidney Summary.

Now execute a baseline run running for 60 min. w/ 60 min. between printouts.

- b) Deplete ECFV via hemorrhage of 1000 ml. in 60 min. (note: look up HEMVOL & HEMMIN in Help info on:)
- 1) Continue the experiment for **6** days (d) at 6 hour (h) intervals. (change 3d to 6d below)

What acid-base effect has the hemorrhage had? Use the values for Na excretion, urine pH and blood pH to explain the likely pump mechanism responsible.



Initial setup