First 2008
VIVA 2

Outline the distribution of total body water

"Please describe total body water and what may cause interpatient variability"

60% of weight, decreased in women, elderly and obese patients, increased in infants
20% is the ECF (14kg) which consists of the plasma volume (3kg) and the ISF (11kg)
40% is the ICF (28kg) which is 2kg RBCs and 26kg other cells
It is regulated by changes in osmolality which is sensed by the hypothalamus
this modifies water intake via thirst and output via ADH action of the cortical collecting duct

"Compare and contrast the electrolyte compositions of the ECF and the ICF"

	K	Na	Cl	HCO3	Amino acids	Mg	Ca
ICF -	139	12	4	12	138	0.8	0.0002
ECF -	4	145	116	24	9	1.5	1.8

"Please define osmosis"

Movement of solute across a semi-permiable membrane until the concentration of the solution on both sides is equal

"Define diffusion"

Is the movement of particles through random motion from regions of higher concentration to areas of lower concentration.

"What is Osmolality?"

Is the number of osmols of solute per kg of solvent and is independent of temp (osmolarity is per litre)
Measured by assessing colligative properties such as freezing and vapour point depression (osmometer)
Estimated by the formula 2(Na) + BSL + Urea (normally within 10 of measured)

"what is Tonicity?"

Is the effective osmolality of a solution

"Please describe the fluid distribution of commonly used fluids"

Isotonic crystalloid will distribute through the ECF (1000 ml NS results in a plasma vol increase of 250ml)
Glucose based cystalloids will distribute throughout the total body water (like pure water)
Colliods will remain in the intravascular space for a duration dependent on the colloid properties