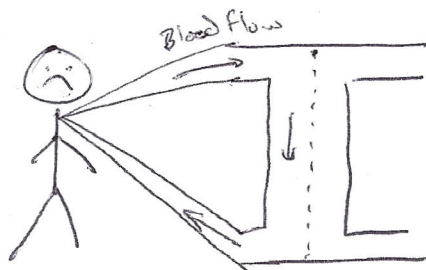


Dialysis Explained



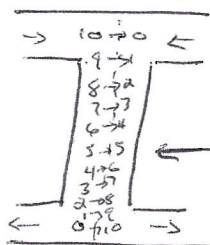
Dialysis Machine

The goal is to remove solute by diffusion

Diffusion is influenced by

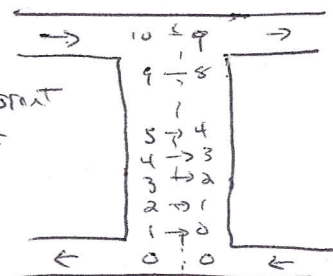
- Gradient
- Flow
- Solute size

① Gradient



In concurrent system
the gradient would
equalize

But in a countercurrent
system the gradient
is maintained



② Flow

Blood flow usually at 400-500

Dialysate flow is about twice this

IF the flow is too fast, no diffusion will occur

IF the blood flow is too slow, the system will clot

③ Solute Size

Smaller solute diffuses faster than larger solute

What about fluid removal?

Fluid is removed by creating a transmembrane gradient

This gradient is made by adding pressure to the
blood flow

What goes in dialysate?

Potassium: role of 7 (serum K^+ + dialysate K^+ = 7)

Chloride: "filler"

Sodium: Should not be set too high or pt will be thirsty and drink fluids

Bicarb: goal ~ 30

Phos: none

Glucose: to prevent hypoglycemia

Calcium: for balance / repletion

Dysequilibrium Syndrome

Urea freely diffuses between compartments but this does not happen quickly. In CKD urea builds up over days, dialysis removes it over hours. If too much urea is initially removed dysequilibrium syndrome can occur.