

# How to Calculate e-Free Water Clearance (eFWC)\*

1. Clearance (CL) of anything (X) =  $U_x * \text{Volume}_{\text{urine}} / P_x$

2. CL (electrolyte, e) =  $(U_{\text{Na}} + U_{\text{K}}) * \text{Volume} / P_{\text{Na}}$   
CL (e-free ) = FWC

$U_{\text{Na}}$  = Urine sodium

$U_{\text{K}}$  = Urine potassium

$V$  = Urine volume = CL (e) + CL (e-free )

$P_{\text{Na}}$  = Plasma sodium

3. Substitute & rearrange:

$$V = CL_e + \text{eFWC}$$

$$V = (U_{\text{Na}} + U_{\text{K}}) * V / P_{\text{Na}} + \text{FWC}$$

$$\text{eFWC} = V (1 - U_{\text{Na}} + U_{\text{K}} / P_{\text{Na}})**$$

Example:

$$V = 100 \text{ mL/hr}$$

$$U_{\text{osm}} = 500 \text{ mosm/L}$$

$$P_{\text{osm}} = 260 \text{ mosm/L}$$

$$\begin{aligned} \text{FWC} &= V (1 - U_{\text{osm}} / P_{\text{osm}}) \\ &= (100 \text{ mL/hr})(1 - 500/260) = -92 \text{ cc/hr} \end{aligned}$$

Negative FWC  $\rightarrow$  free water being retained!

\*Does not account for intake or insensible losses  
\*\* If  $U_{\text{Na/K}}$  unavailable, try:  $\text{FWC} = V(1 - U_{\text{osm}}/P_{\text{osm}})$