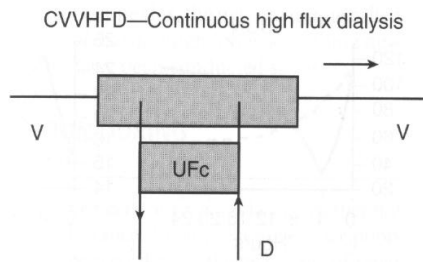
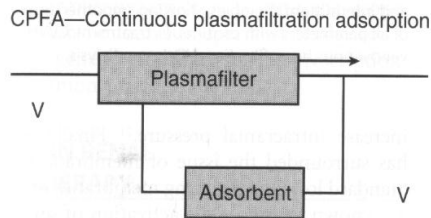


Diffusive and convective blood purification
 Countercurrent dialysate flow
 High permeability membrane utilized thus small and middle molecules removed
 $Q_b = 50-200 \text{ mL/min}$ $Q_f = 8-12 \text{ mL/min}$
 $Q_d = 10-20 \text{ mL/min}$ $K = 20-40 \text{ L/24h}$



Diffusive and convective blood purification through a highly permeable membrane
 Back diffusion occurs in membrane
 Dialysate in countercurrent flow
 Accessory pumps to control ultrafiltration
 Replacement not required since fine regulation of filtration and backfiltration
 $Q_b = 50-200 \text{ mL/min}$ $Q_f = 2-8 \text{ mL/min}$
 $Q_d = 50-200 \text{ mL/min}$ $K = 40-60 \text{ L/24h}$



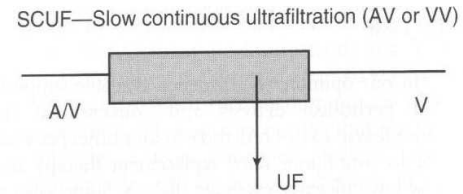
A highly permeable plasmafilter filters Fluid plasma allowing it to pass through a bed of adsorbent material (carbon or resins)
 Fluid balance maintained
 Can be coupled with CVVH or CVVHD/F
 $Q_b = 50-200 \text{ mL/min}$ $P_f = 20-30 \text{ mL/min}$

continuous venovenous haemodiafiltration

continuous high flux dialysis

continuous plasmafiltration absorption

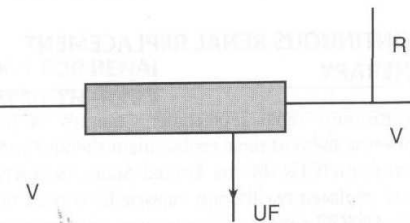
diagrams of renal replacement modes
 [created by Paul Young 06/01/08]



Technique used for fluid control only
 Convective mechanism
 Ultrafiltrate isoosmotic to blood
 Used in arteriovenous or venovenous mode
 $Q_b = 50-100 \text{ mL/min}$
 Ultrafiltration rate controlled

slow continuous ultrafiltration

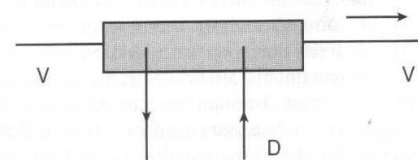
CVVH—Continuous venovenous hemofiltration



Convective blood purification through high permeability membrane
 Ultrafiltration rate controlled
 Ultrafiltrate replaced by replacement solution
 $Q_f = 50-200 \text{ mL/min}$ $Q_f = 8-25 \text{ mL/min}$
 $K = 12-36 \text{ L/24h}$
 Can be used in arteriovenous mode

continuous venovenous haemofiltration

CVVHD—Continuous venovenous hemodialysis



Diffusive blood purification through low permeability dialyser
 Dialysate solution in countercurrent flow
 No replacement fluid used
 $Q_b = 50-200 \text{ mL/min}$ $Q_f = 2-4 \text{ mL/min}$
 $Q_d = 10-20 \text{ mL/min}$ $K = 14-36 \text{ L/24h}$
 Small molecule clearance only
 Can be used in arteriovenous mode

continuous venovenous haemodialysis

A, arterv; D, dialysate; K, clearance; Pf, plasma filtration rate; Qb, arterial flow; Qd, dialysate flow Qf, ultrafiltration rate; UF, ultrafiltrate; UFc, ultrafiltrate control pump; V, vein.