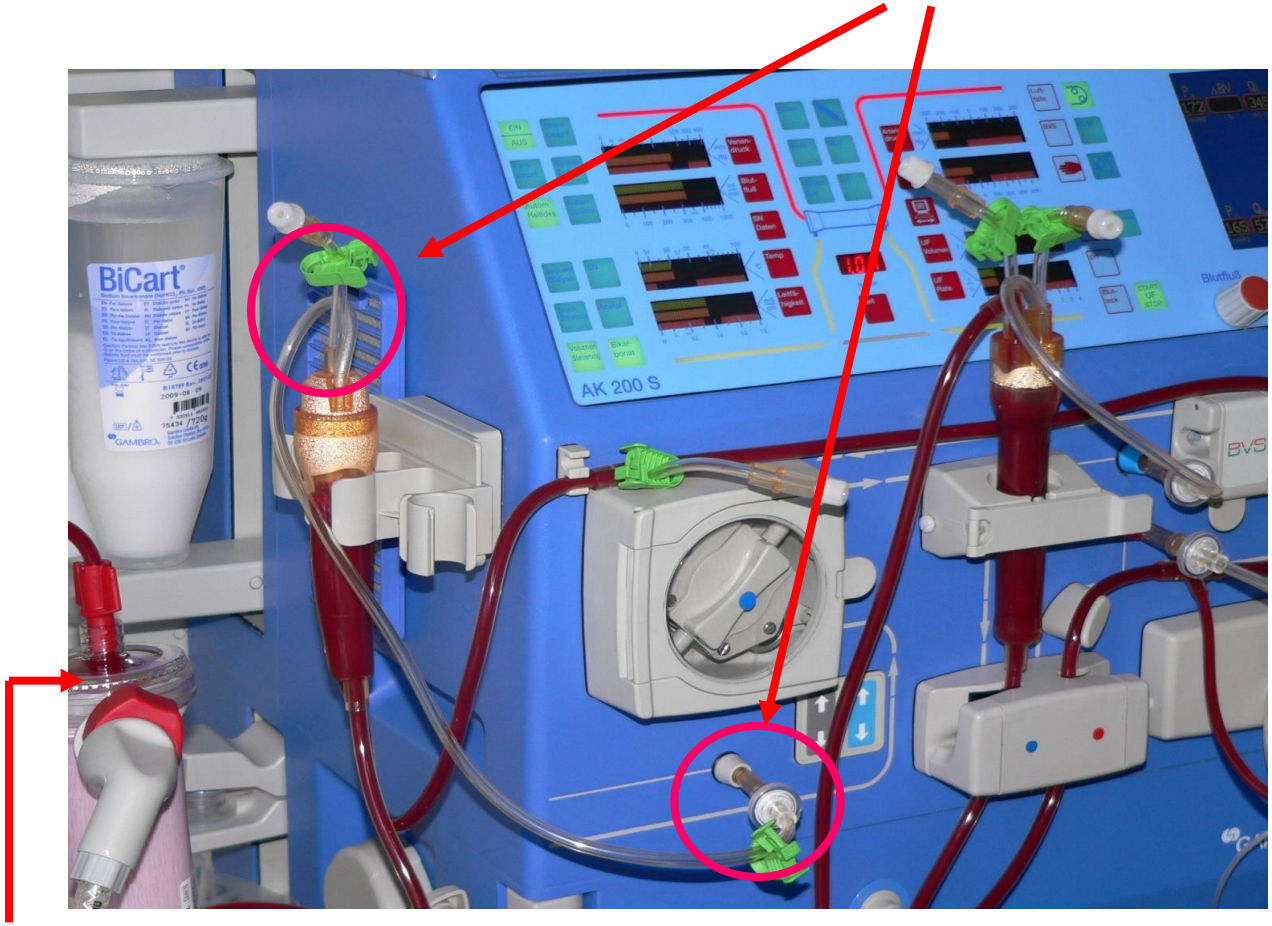
Mechanical Haemolysis and Systemic Pressure

Thomas Ryzlewicz

Measurement of the Systemic Pressure

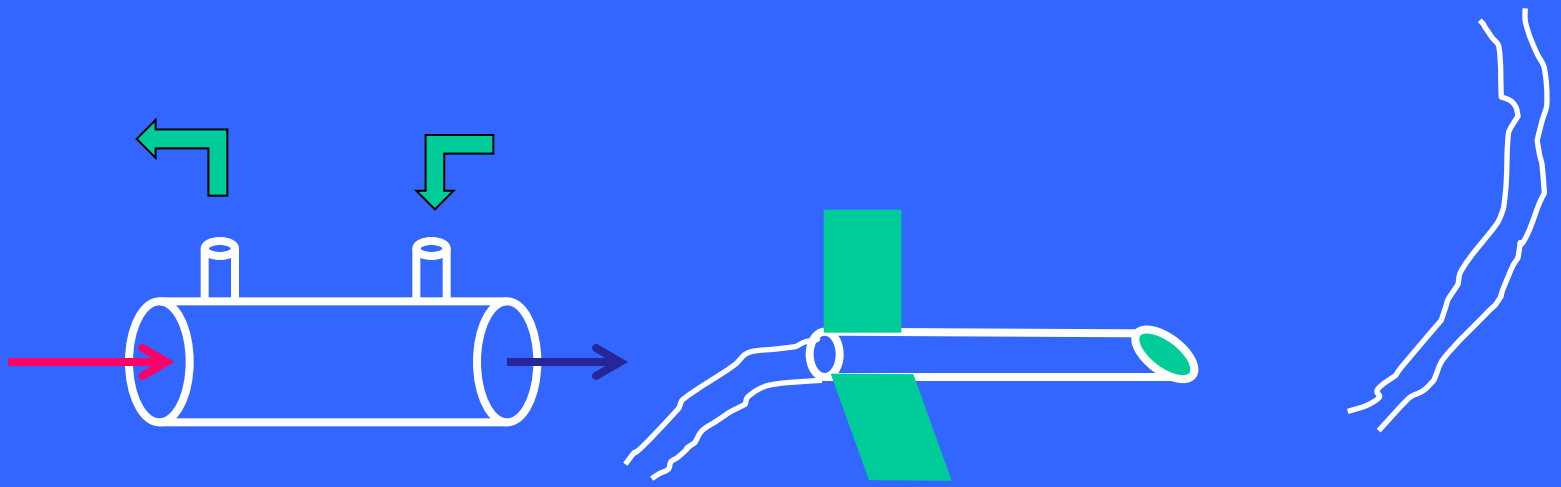


= Pressure at the Entry of the Dialyzer

why is the Systemic Pressure Measurement simply necessary?

- to detect a critical Elevation of the mechanical Resistance early in the entire Dialysis System (Dialyzer and Bloodline)
- Condensation of Labor and Experiece had developed unfavourably in nursing

the Additional Mechanical Resistance in the Dialysis System



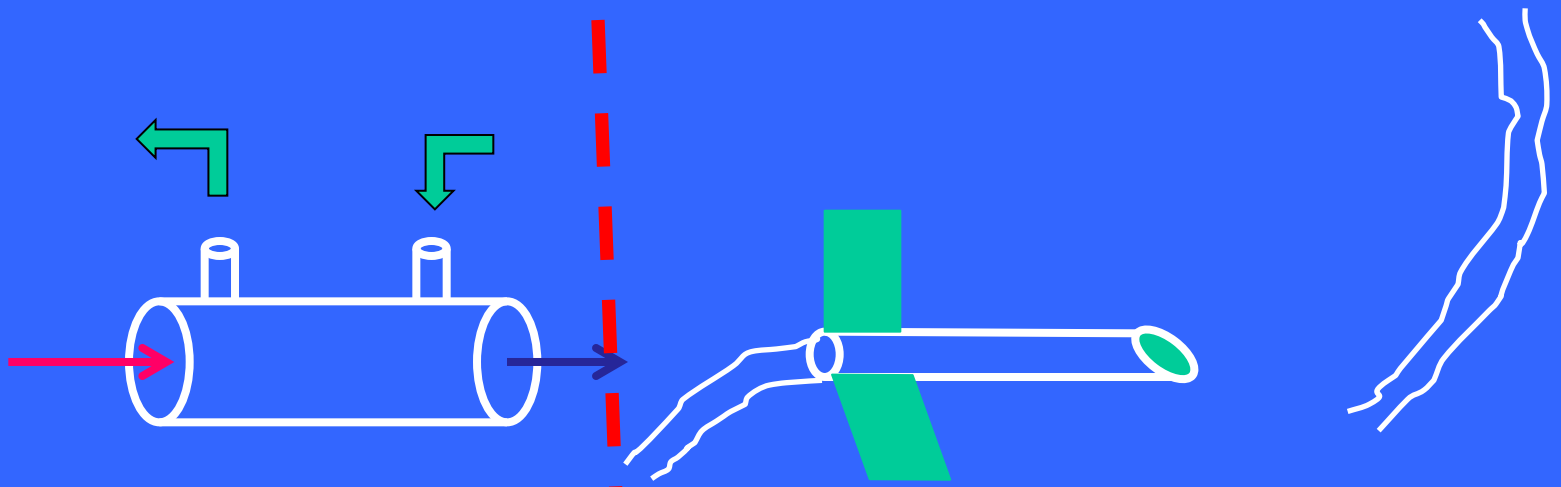
Resistance in and in front of the Dialyzer

Resistance of the Tubule

Resistance of the Vessel

Additional Resistance, comparable to ET Impedance

the Additional Mechanical Resistance in the Dialysis System



Resistance in and in front of the Dialyzer

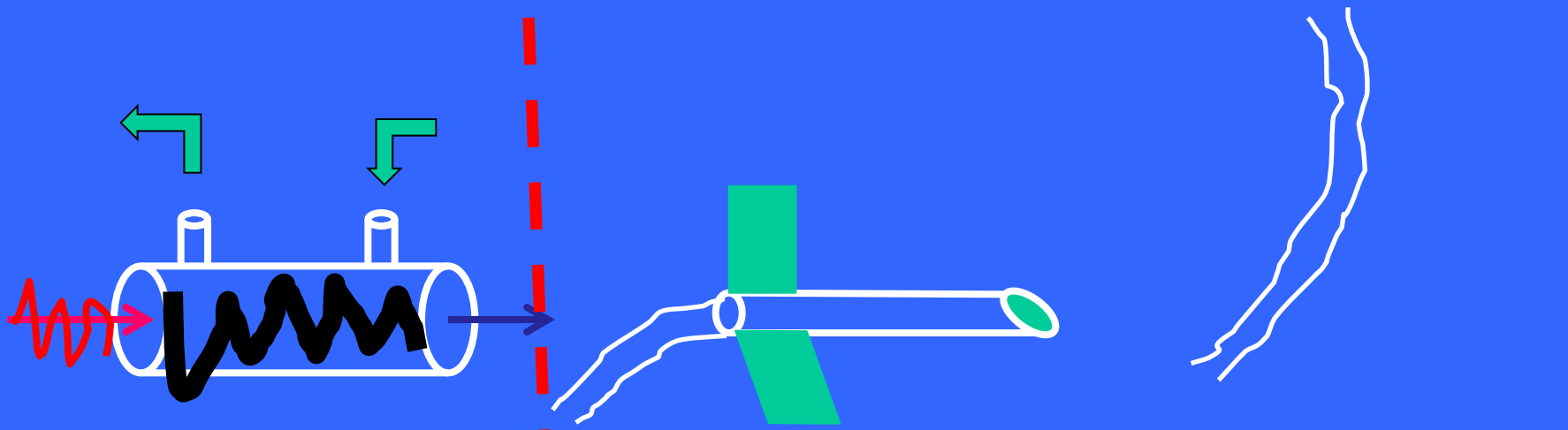
Resistance of the Tubule

Resistance of the Vessel

here <u>no Alarm Monitoring</u>(!)

Alarm Monitoring by venous Pressure

. . . and now the Resistance in the Dialyzer increases . . .



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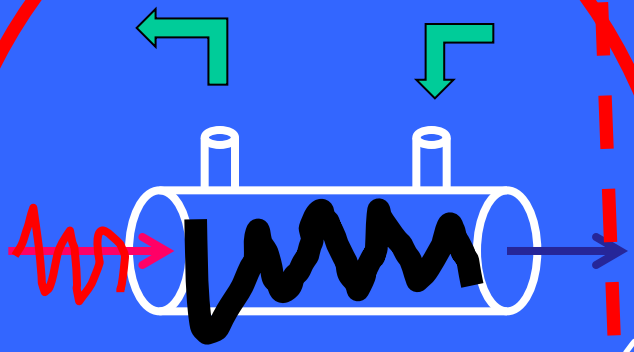
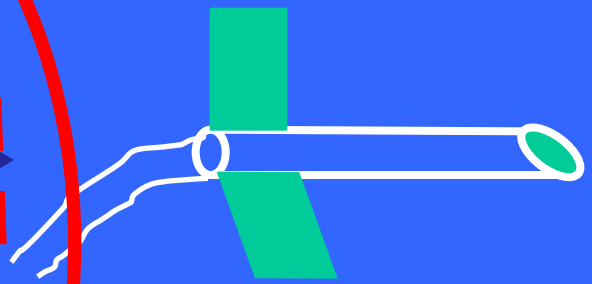
HAEMOLYSIS





Resistance in and in front of the Dialyzer

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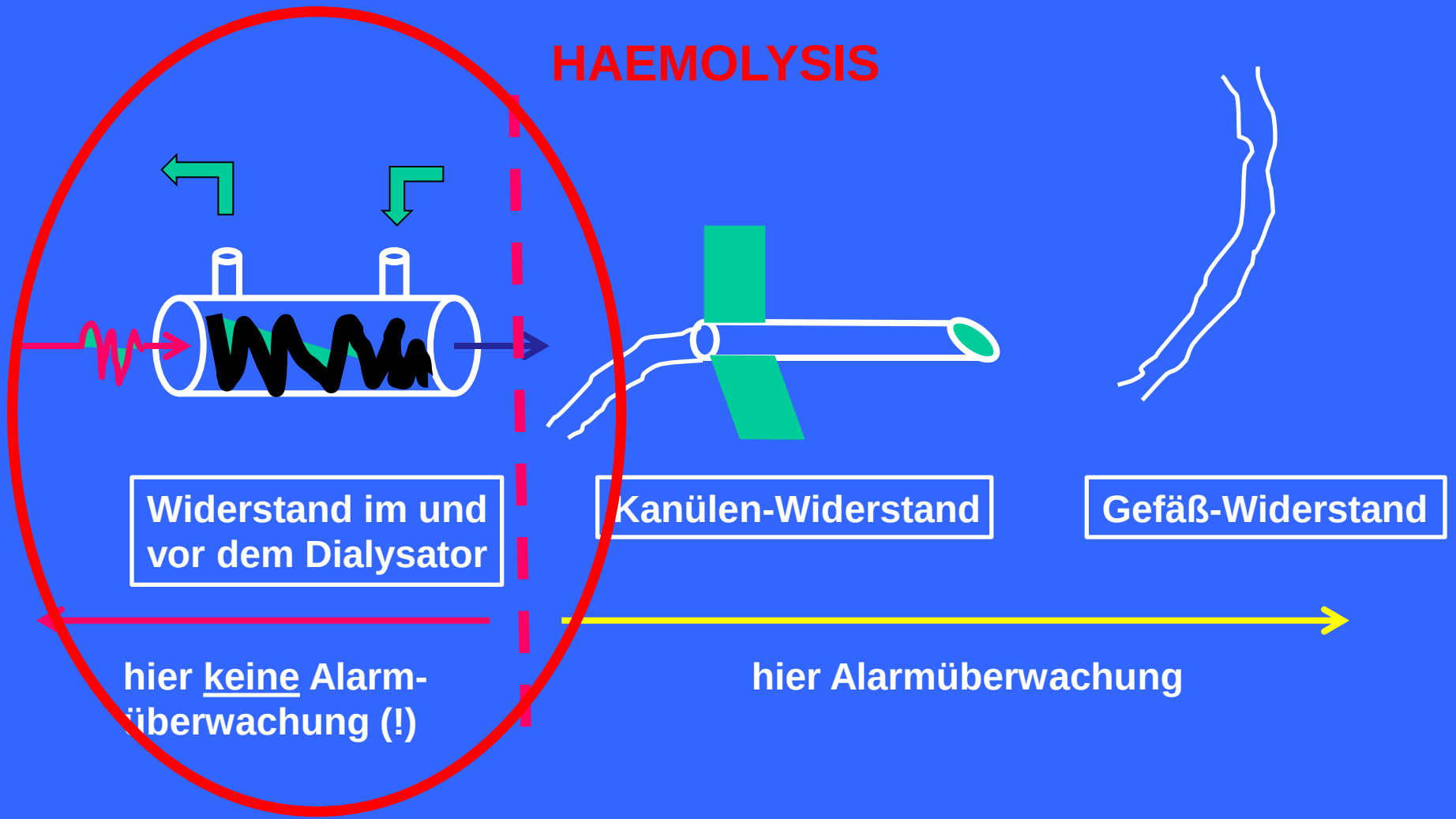
. . . und wenn jetzt der Widerstand im Dialysator steigt . . .

HAEMOLYSIS

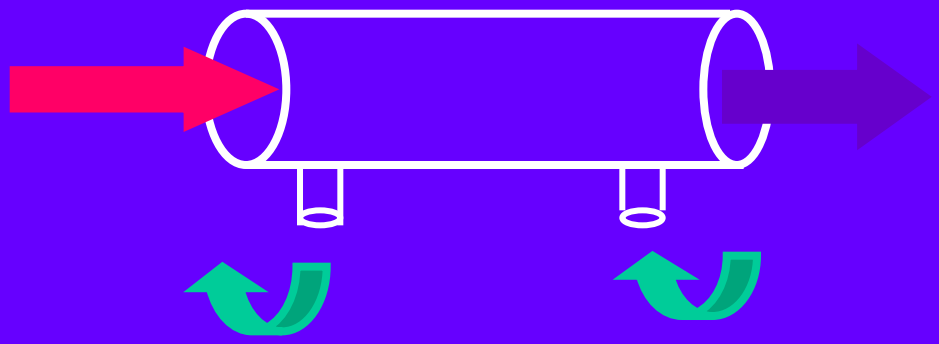


. . . und wenn jetzt der Widerstand im Dialysator steigt . . .

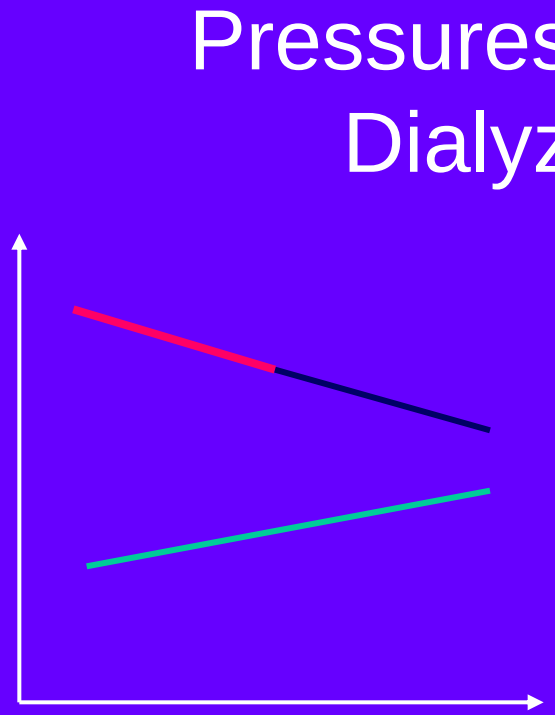
Online-HDF

Thomas Ryzlewicz

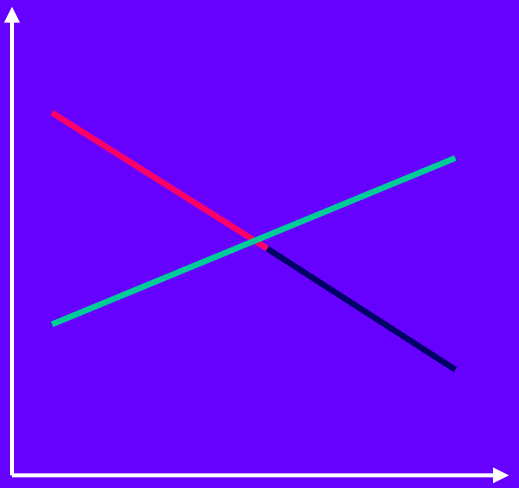

"Stanley Shaldon . . . a man with the unusual ability to be proven right in the long run in almost everything he says"
editorial NEPHRON 1981 27:1



Pressures in the Dialyzer



Low-flux-HD



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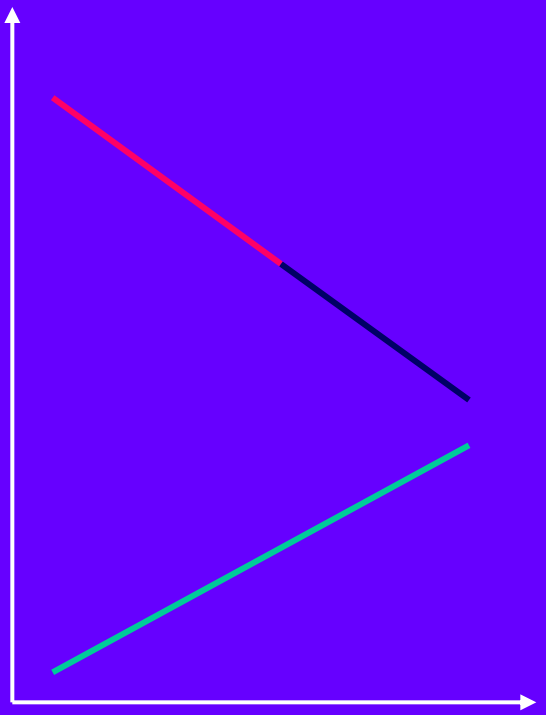

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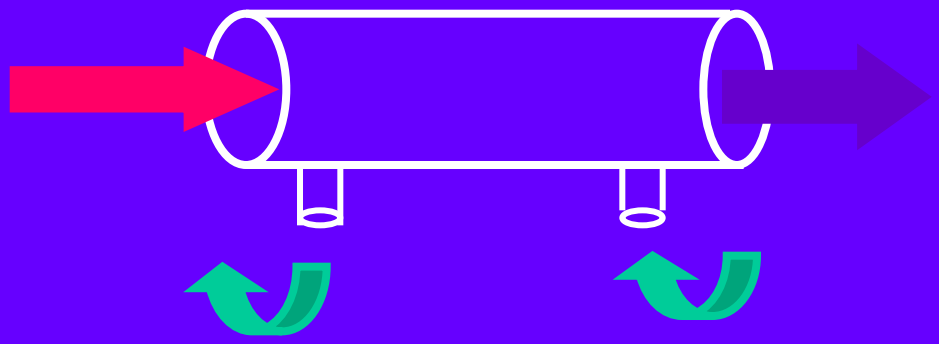
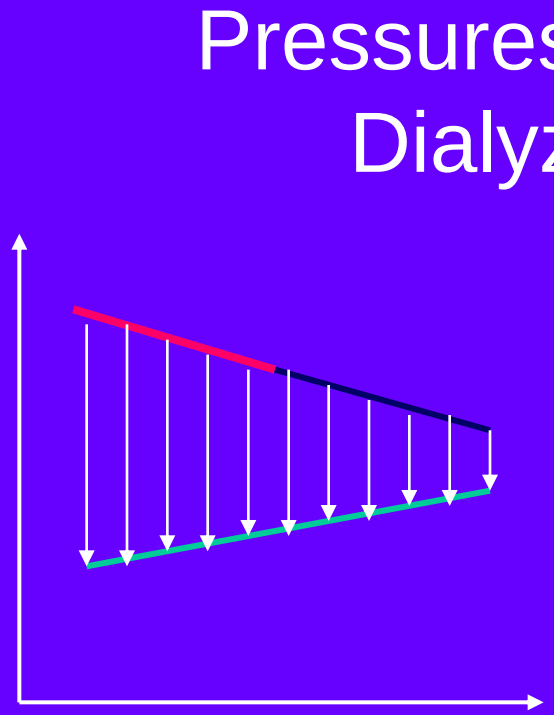
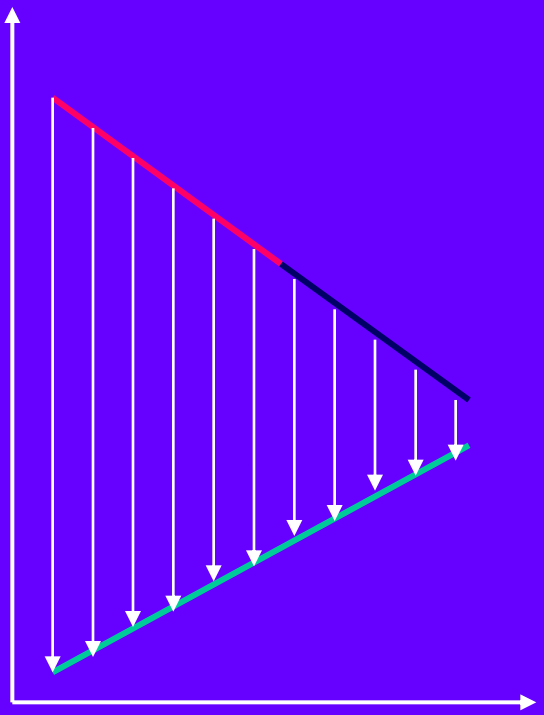


Pressures in the Dialyzer

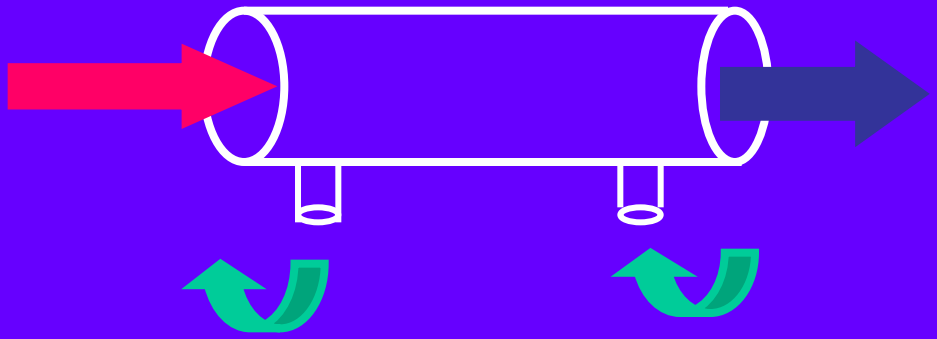


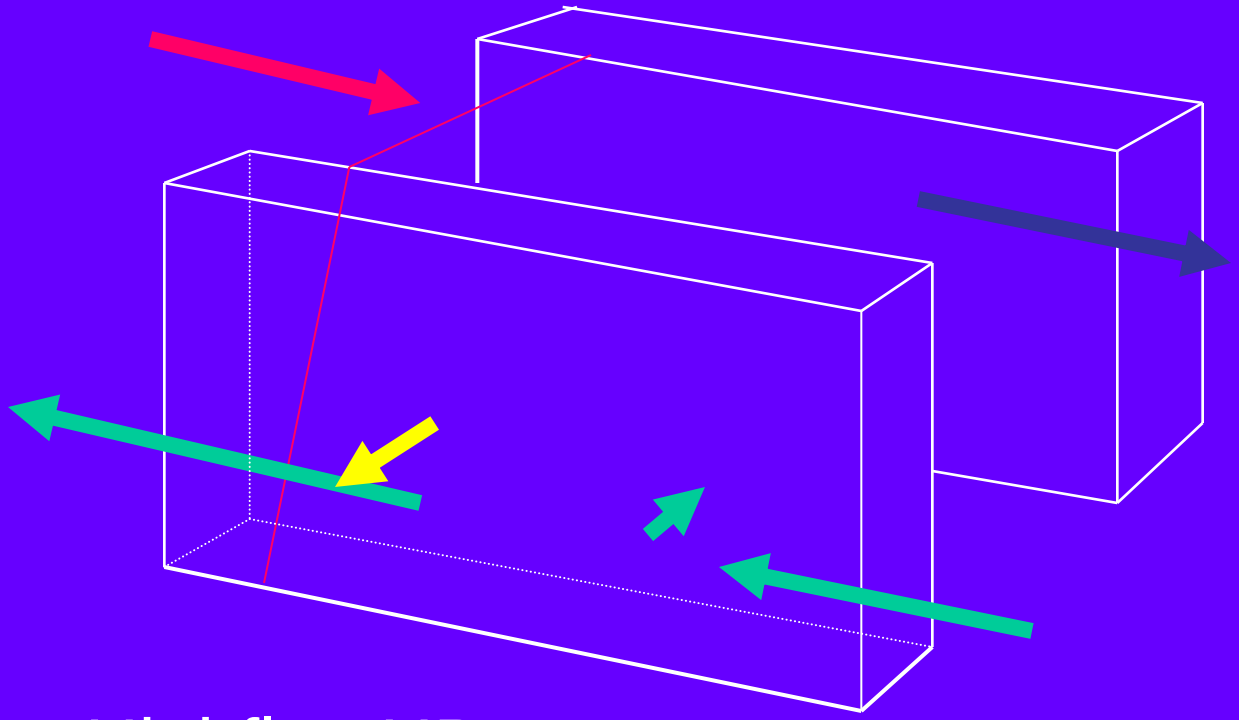
Low-flux-HD

High-flux-HD

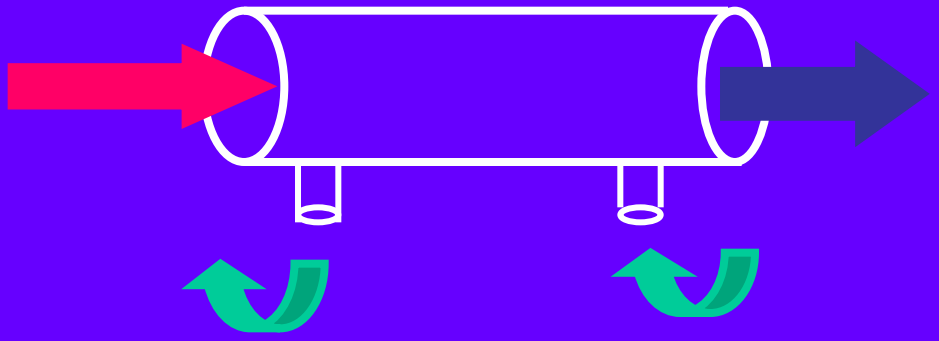


online-HDF

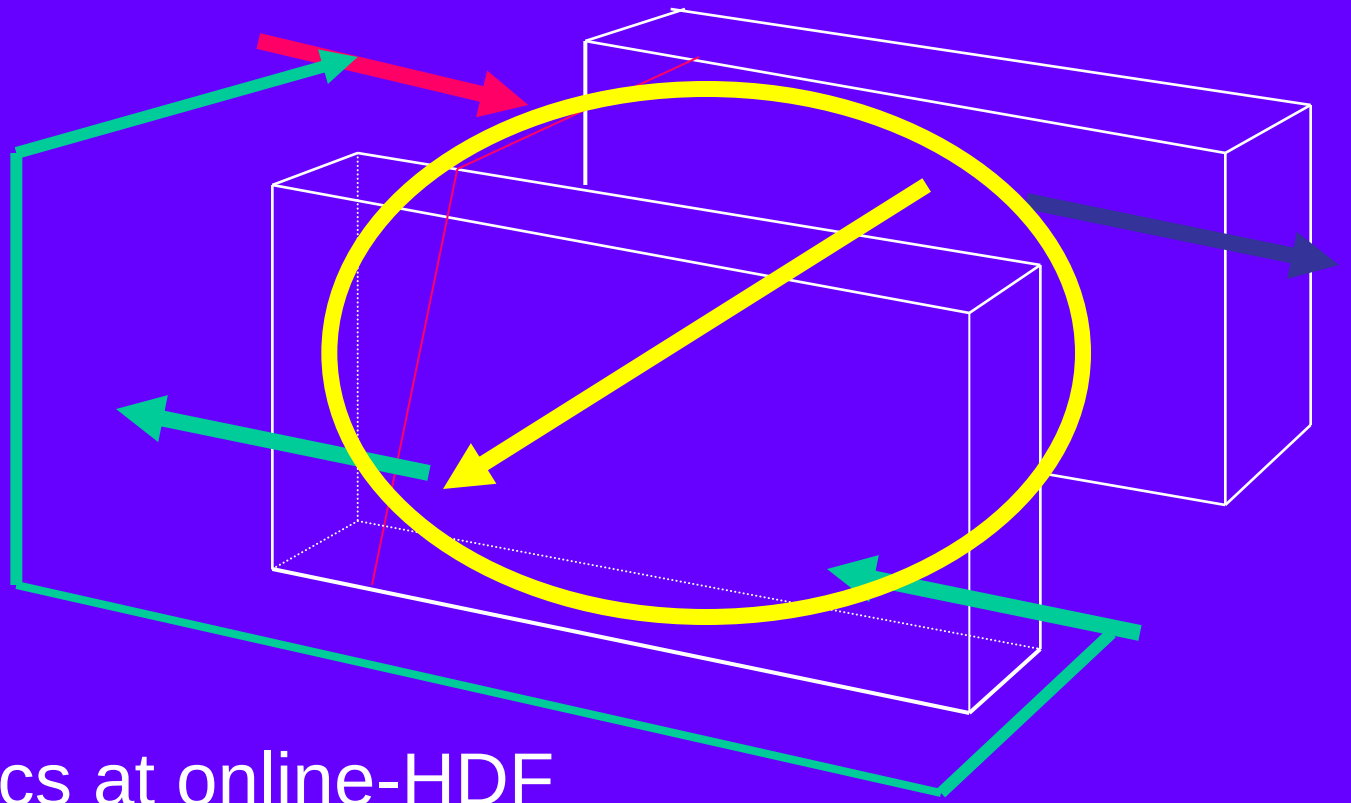




Hydraulics at Highflux-HD



Solvant Drag



Hydraulics at online-HDF

online-Therapie ist Herstellung von Infusionslösung!

European Pharmacopoeia 2005 kennt online-Herstellung von Infusionslösung nicht(!)

klar ist die Keimfreiheit für Infusionslösungen

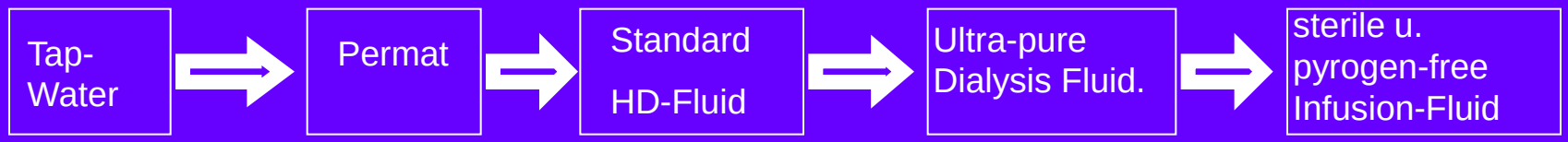
ISO-Norm 11663 2009 Qualität von Dialysierflüssigkeiten und verwandten Therapien (steril und pyrogen-frei **(=>EU<0,03/ml)**

SAL > 6 (sterility assurance level) entspr.10^{-8} Keimred./ml 3 Filter (ultra) 10^{-11}/ml

online-Therapy is Production of Infusion-Fluid!

According to I. Ledebo

ISO-Norm 11663-2009



	Softening + Reverse-Osmosis	Konzentrats	Ultrafiltration	Ultrafiltration
bakteriolog. Quality				
CFU/ml	$< 10^{-2}$	$< 10^{2}$	$< 10^{-1}$	SAL > 6
EU/ml	< 0,25	< 0,50	< 0,03	< 0,03
Employment in the Dialysis	Basics for every Dialysis Fluid	Lowflux synthetic	Highflux-HD u. Low.-Vol.-HDF	online-HDF/HF Infusion-Fluid

online-Therapy is Production of Infusion-Fluid!

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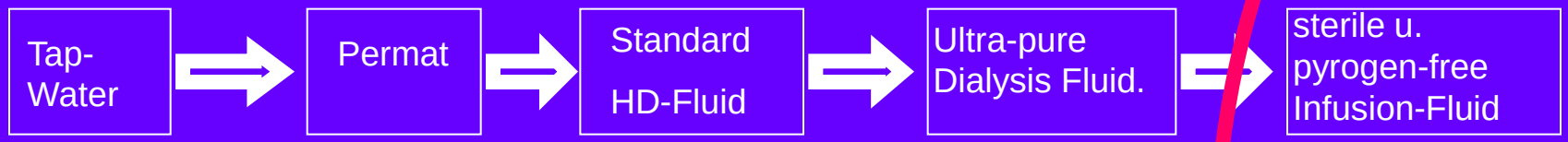

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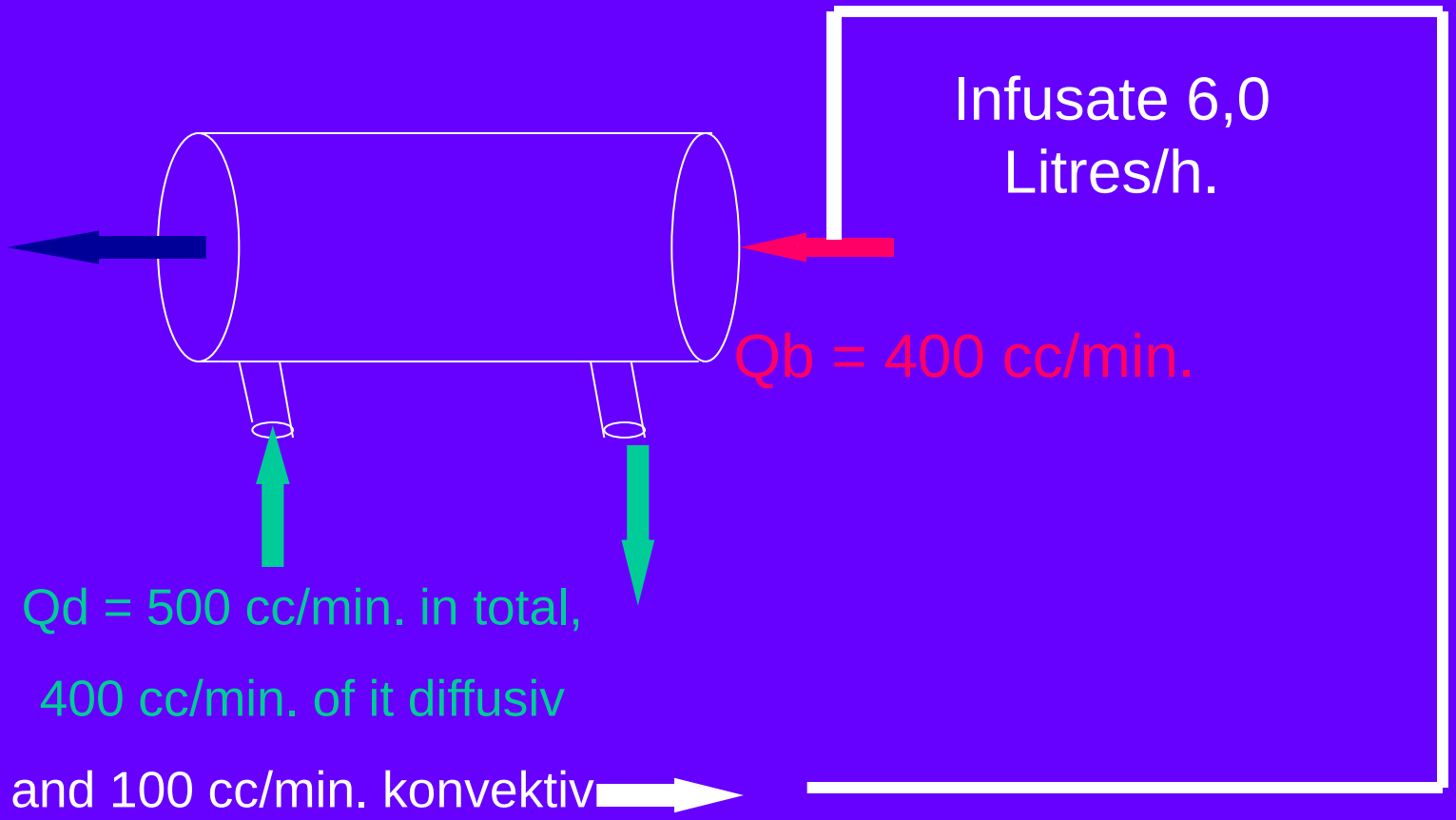
online-Therapy is Production of Infusion-Fluid!

the Ultra-
System:

one step Ultrafiltration	CFU Reduktion 10^{-5} SAL 3
two step Ultrafiltration	CFU Reduktion 10^{-8} SAL 6
three step Ultrafiltration (with U-2000-Ultrafilter)	CFU Reduktion 10^{-11} SAL 9

how does a HDF-Regime look like?

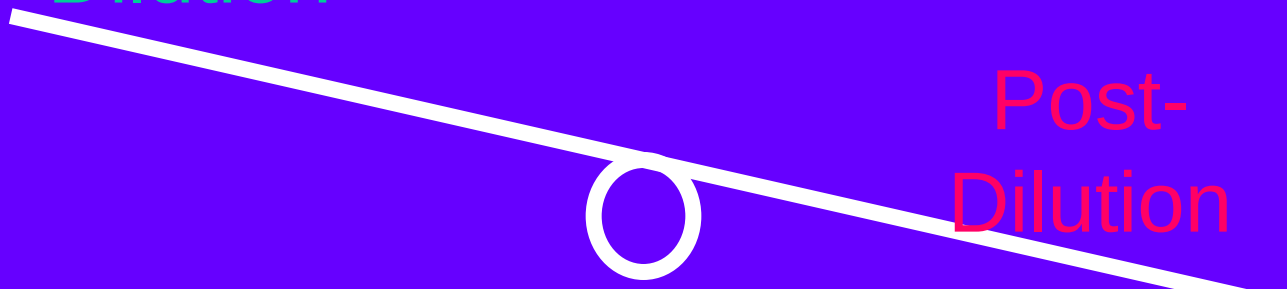


HDF: Prädilution or Postdilution?

- Disadvatage: Reduction of the Conzentration Gradient

- Disadvantage: Lengthening of the distances of Diffusion by the packed RBC‘s
- Disadvantage: high Sekundary Membrane by Protein

HDF: Prädilution or Postdilution?



Reduction of the

Conzentration Gradient

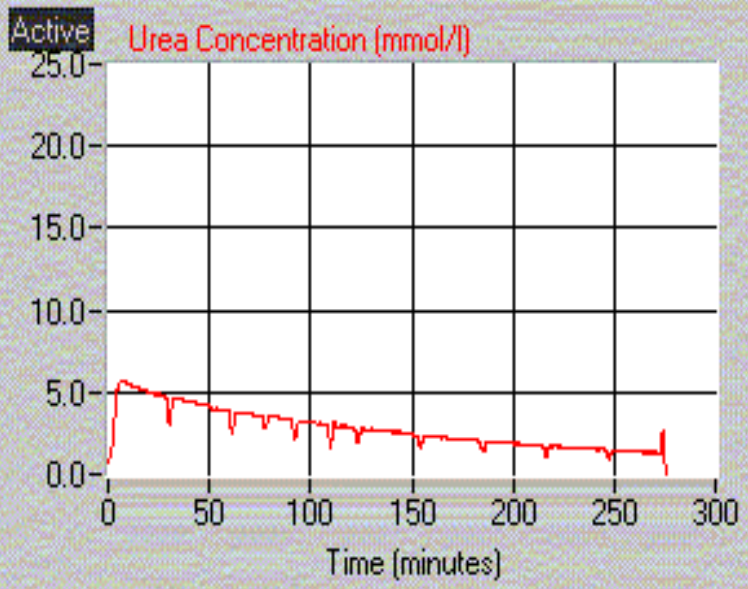
Lengthening of the way of Diffusion

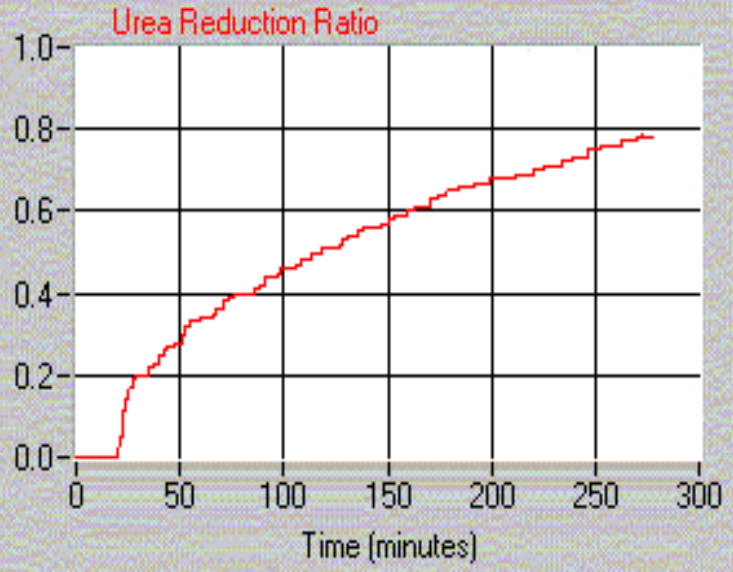
Sekundary Membrane

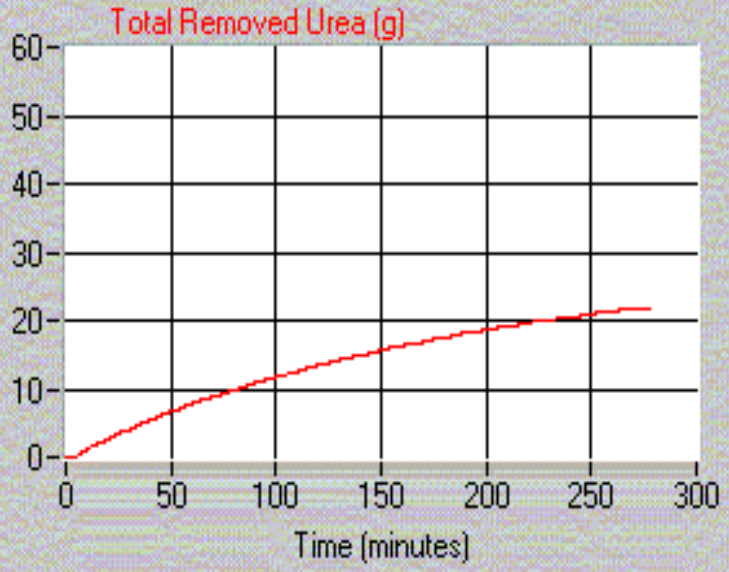
DQM 200 - Clinical Information

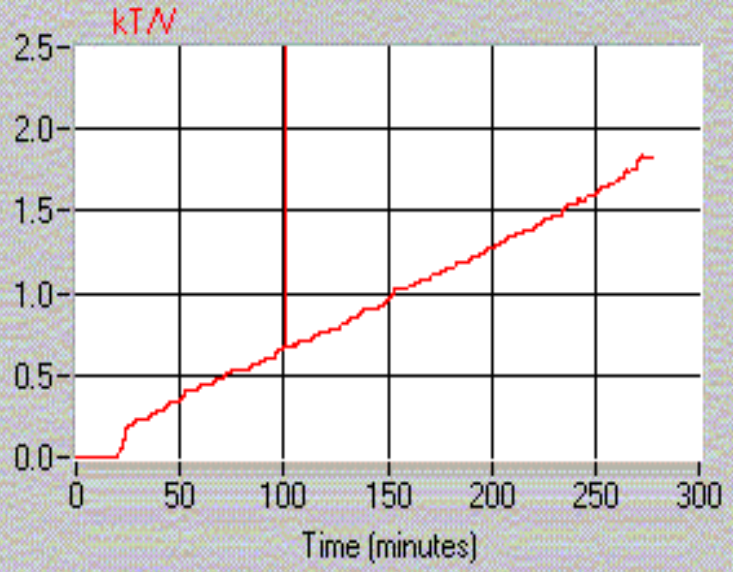
File Windows Graph

großflächige normale HD









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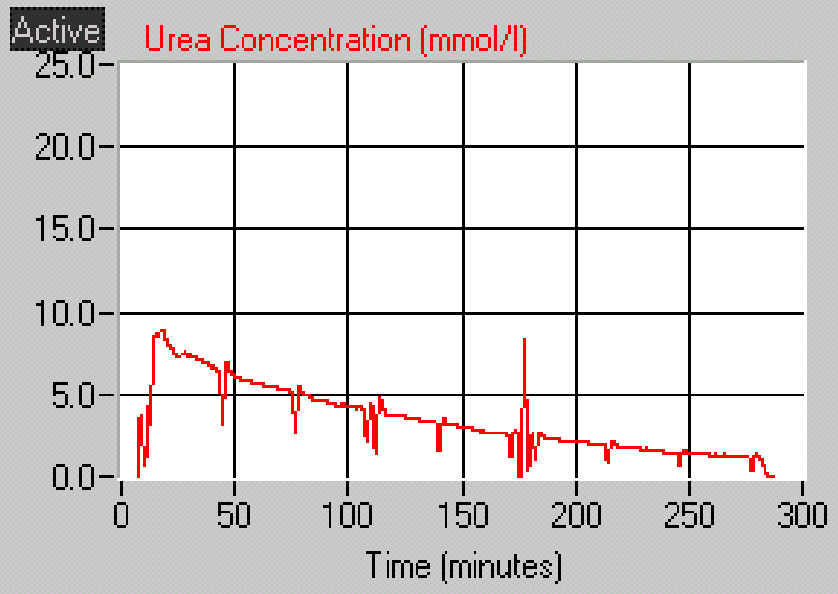
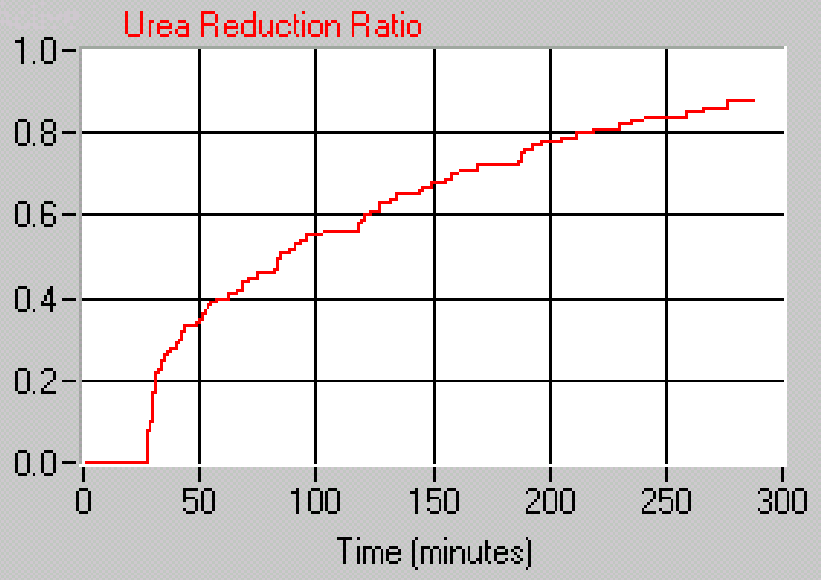
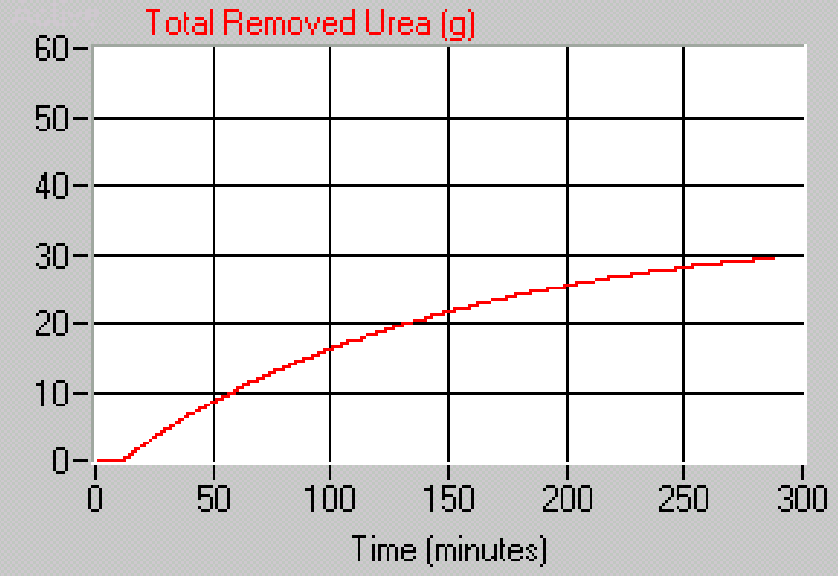
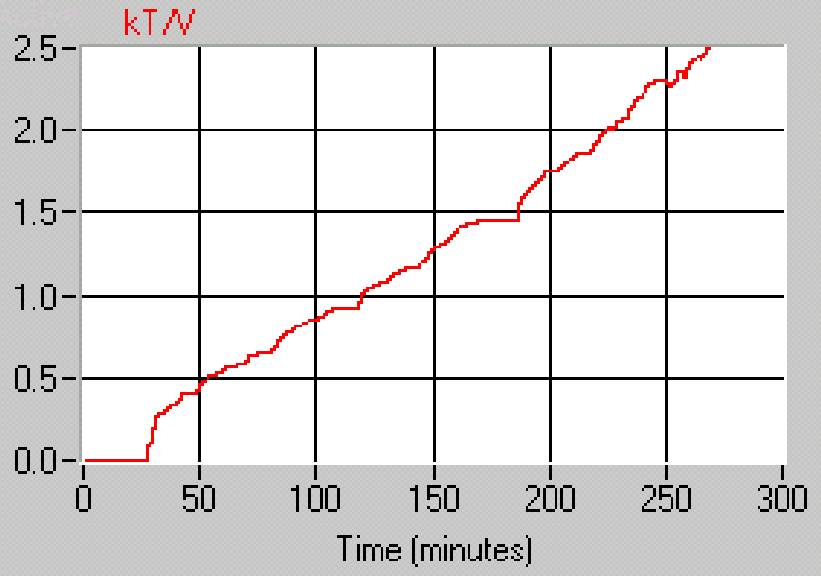
File Windows Graph

4:30 h HDF Prädilution 27 Ltr.









DQM 200 - Clinical Information

File Windows Graph

4:30 h HDF Postdilution 27 Ltr.