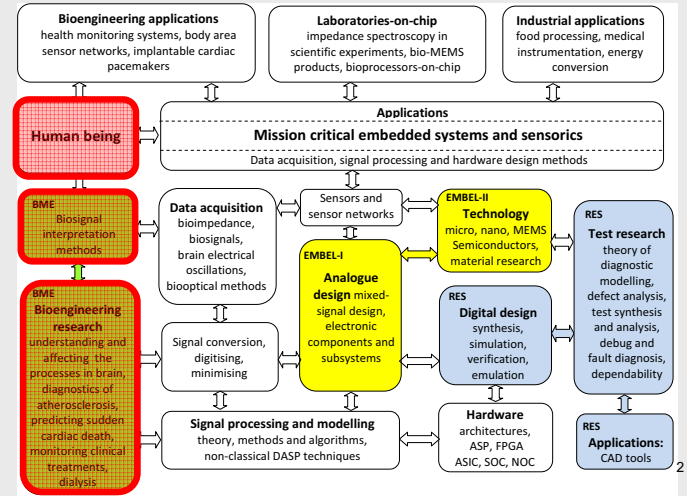


## Optical monitoring of dialysis

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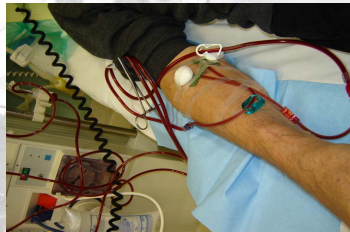
## Dialysis

Dialysis machine



Dialüüsravi optiline monitoring

Arteriovenous fistula

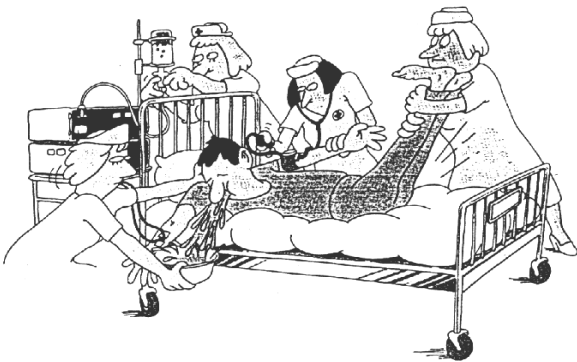


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## Reality in Hemodialysis

- ◆ 2.15 million ESRD patients worldwide (about 1.47 million HD patients) – 6 % annual growth rate (Fresenius 2008)
- ◆ Time consuming: 4-5hrs, 3-4 times/week
- ◆ Complex medical and dietary regimen
- ◆ Expensive – expences ca 50 billion \$ annually (among 20 % technical)
- ◆ Complications!!!

## Complications of dialysis



## Adequate Hemodialysis Dose

- ◆ The dialysis care team should deliver a Kt/V of at least 1.2 (SPVV) for both adult and pediatric HD patients.
- ◆ To prevent the delivered dose falling below the recommended minimum dose, the prescribed dose of HD should be Kt/V 1.3.

NKF K/DOQI guidelines. CLINICAL PRACTICE GUIDELINES FOR HEMODIALYSIS ADEQUACY: UPDATE 2006

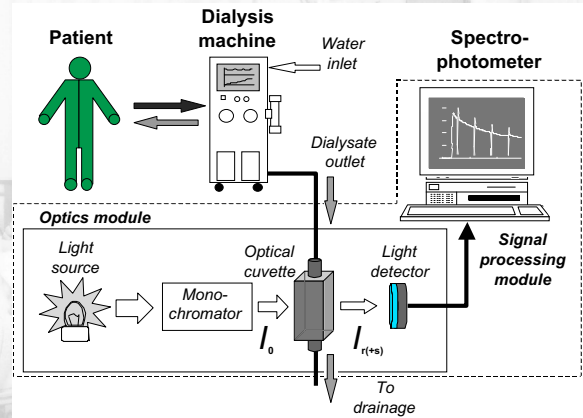
## On-line monitoring

♦ It is suggested that on-line, real-time urea monitoring during every dialysis procedure is the ideal way to ensure that all dialysis are adequate

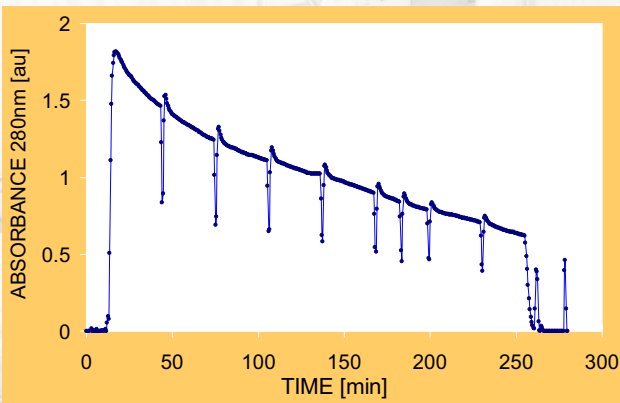
Lindsay, R. M.

## Set-up

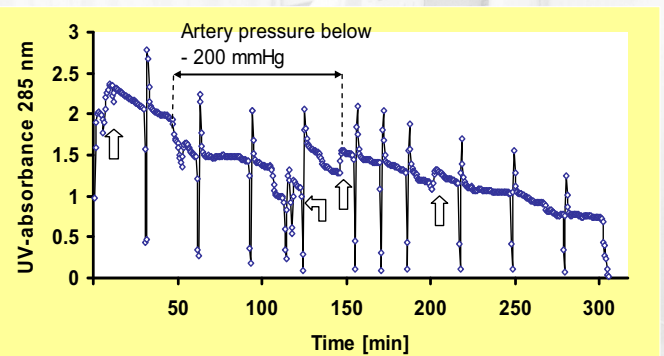
Fridolin I et al Int J Artif Organs 2002



## Optical on-line Dialysis Monitoring

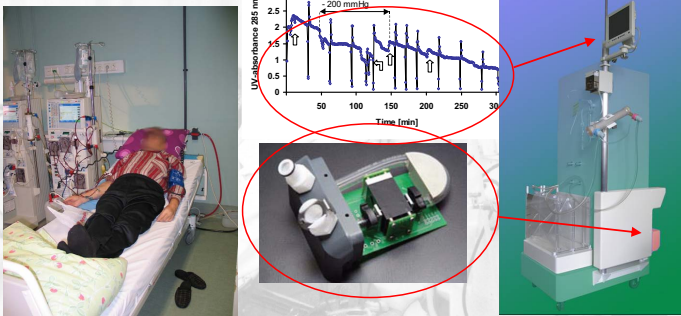


## Unstable dialysis: hypotension

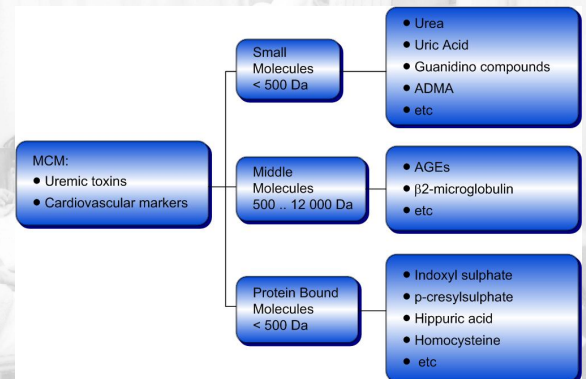


Uhlir, Fridolin et al. EDTNA-ERCA J 2006

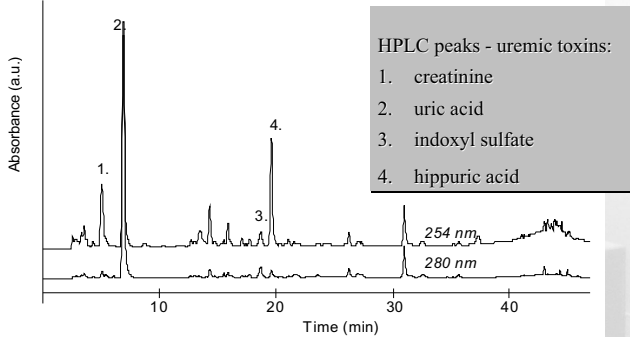
## DiaSens, Ldiamon AS



## MultiComponent Monitor (MCM)



## HPLC study of uremic toxins

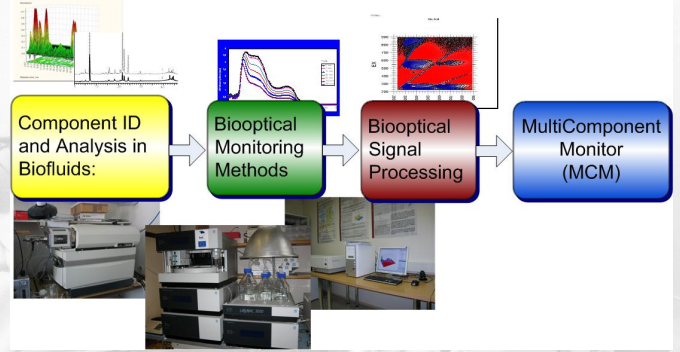


K. Lauri, R. Tanner, J. Jerotskaja, M. Luman, I. Fridolin (2008), A HPLC Study of Uremic Fluids Related to Optical Dialysis Adequacy Monitoring, Submitted to IntJArtOrgans.

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## MCM research activities



## Future trends: wearable HD device



MCM

A. Davenport, V. Gura, C. Ronco, et al (2007). A wearable haemodialysis device for patients with end-stagerenal failure: a pilot study, *The Lancet*, v 15, pp 2005-2010.

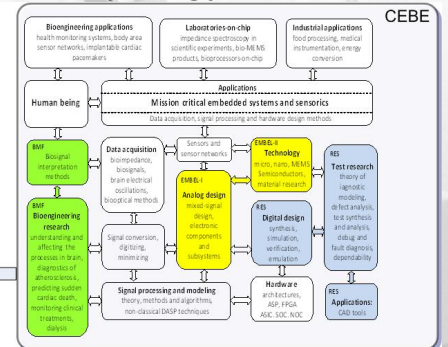
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## CEBE & MCM: from quantity through collaboration to synergy



MCM



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## Täname tähelepanu eest!



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