

IHD or CRRT in the Hemodynamically Unstable Patient?  
The Case for Intermittent Hemodialysis (IHD)

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CRRT has important limitations

- It is expensive
- The patient has to stay in bed
- Anticoagulation is often required 24 hrs/day
- It is labour intensive (filter changes/alarms/24 supervision)

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Let's face it: Conventional IHD has limitations too (if you do it badly)

- More hemodynamic instability?
- Failure to steadily control uremia
- Fluctuations in acid-base control
- Fluctuations in controlling fluid balance

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The ideal solution is better IHD – It is called SLEDD

- SLEDD: Slow Low Efficiency Daily Dialysis
- Apply IHD at an intermediate level of intensity
- Apply it for 8-12 hours
- Apply it every day
- Remove 200-300 ml/hr slowly

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Why SLEDD

- Removes problems of solute, fluid and acid-base control
- Hemodynamic stability
- Patient can get out of bed one SLEDD session is complete
- Less labour intensive over the 24-hour cycle
- Cheaper than CRRT

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SLEDD Machine



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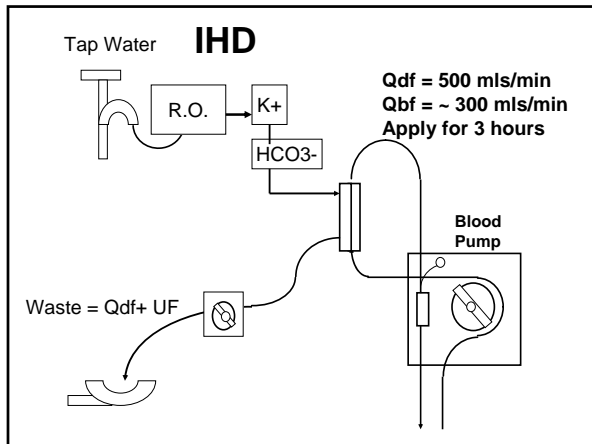
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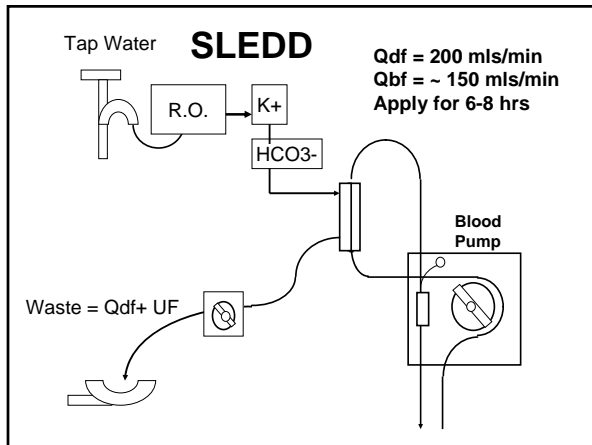
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Do you want convection?  
On – line water for RRT

- Long established use in IHD
- Cheaper than commercial fluids
- Higher volumes in SLED(D)f & EDDf easily
- Safety and requirements for IV replacement
- Regulatory controls

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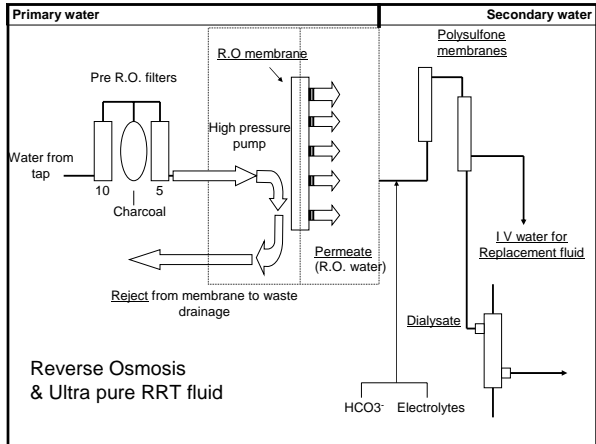
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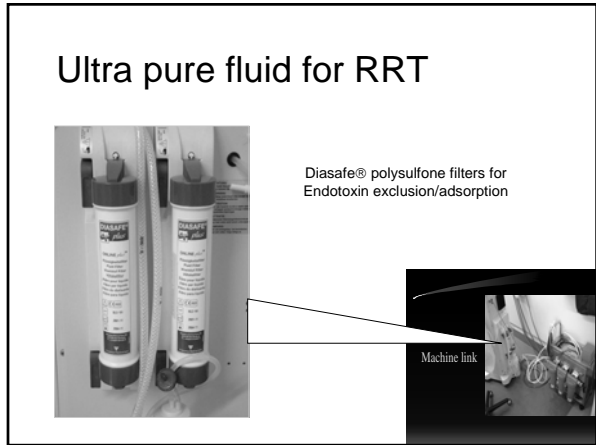
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**SLEDD vs. CRRT**

**Efficacy and Cardiovascular Tolerability of Extended Dialysis in Critically Ill Patients: A Randomized Controlled Study**

Jan T. Kielstein, MD, Ulrich Kretschmer, Thomas Ernst, Carsten Hafer, MD, Matthias J. Bahr, MD, Hermann Haller, MD, and Danilo Fliser, MD

*From the Department of Internal Medicine, Division of Nephrology; and Department of Internal Medicine, Division of Gastroenterology, Hepatology, and Endocrinology, Medical School Hannover, Germany.*

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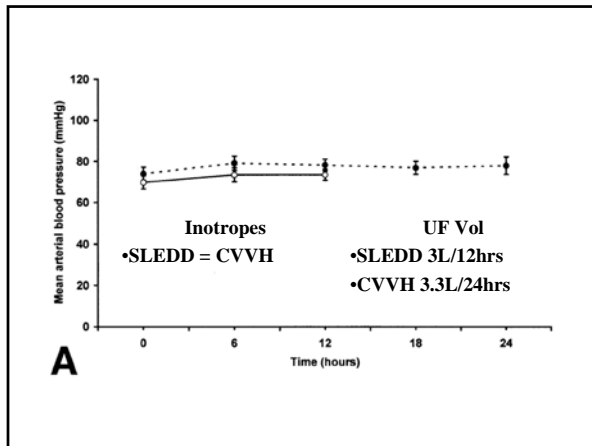
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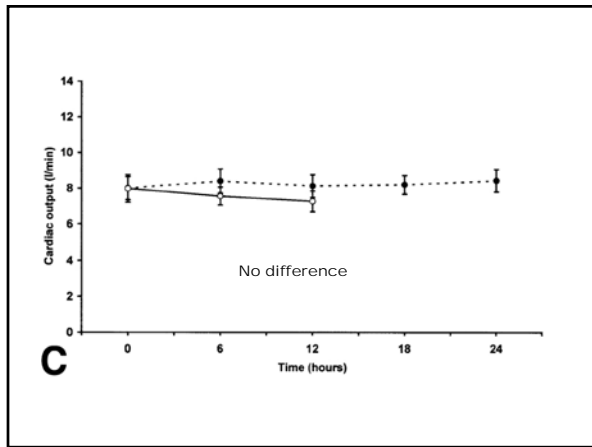
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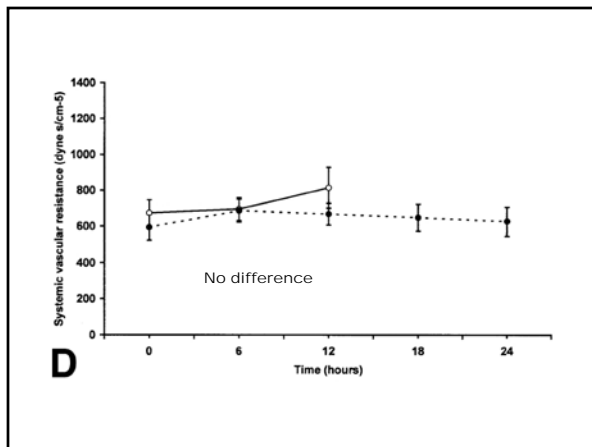
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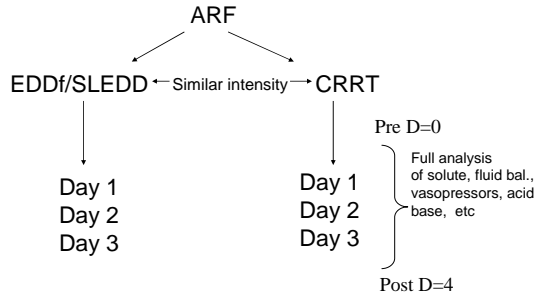
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## Comparative randomized controlled study over 3 days




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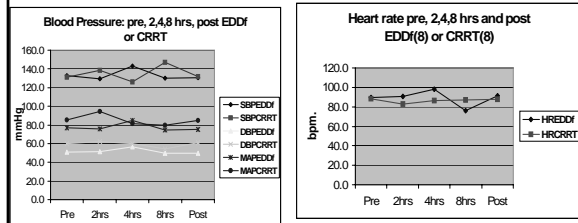
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## Cardiovascular – first day pre - post



n.s.

n.s.

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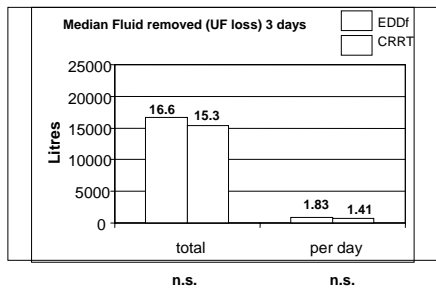
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## Fluid removal over 3 days



n.s.

n.s.

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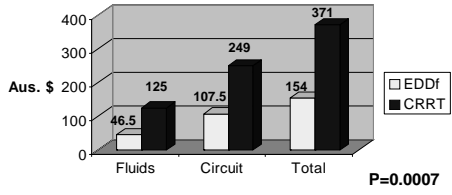
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# Cost

Circuits  
Fluids only  
No machine purchase  
No maintenance

Daily Fluids and Circuit costs for EDDf (20 days) and CRRT (22 days)




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A recent randomized controlled trial  
All patients with multiorgan failure  
Almost all on vasopressors

## Continuous venovenous haemodiafiltration versus intermittent haemodialysis for acute renal failure in patients with multiple-organ dysfunction syndrome: a multicentre randomised trial

Christophe Vincent, Christophe Combes, Alain Corcos, Marie-Alyette Costa de Beauregard, Kado Kouchik, Thierry Bodin, Jean-Louis Falck, Jean-Daniel Chiche, Pierre Lapin, Paul Andrieu, Jean-François Dhainaut, for the Hemodialysis Study Group\*

### Summary

**Background** Whether continuous renal replacement therapy is better than intermittent haemodialysis for the treatment of acute renal failure in critically ill patients is controversial. In this study, we compare the effect of intermittent haemodialysis and continuous venovenous haemodiafiltration on survival rates in critically ill patients with acute renal failure as part of multiple-organ dysfunction syndrome.

**Methods** Our prospective, randomised, multicentre study took place between Oct 1, 1999, and March 3, 2003, in 21 medical or multidisciplinary intensive-care units from university or community hospitals in France. Guidelines were provided to achieve optimum haemodynamic tolerance and effectiveness of solute removal in both groups. The two groups were treated with the same polymer membrane and bicarbonate-based buffer. 360 patients were randomised, and the primary endpoint was 60-day survival based on an intention-to-treat analysis.

Lancet 2006, 368: 270-81

See Comment page 344

\*Group members are listed at end of report.

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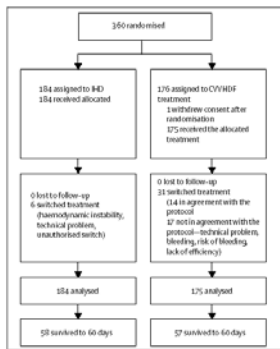


Figure 1: Trial profile  
HD=intermittent haemodialysis, CVVHDF=continuous venous  
haemodiafiltration.

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IHD was really low grade SLEDD on average – some got IHD when better Most got SLEDD when sick

	Intermittent haemodialysis	Continuous venovenous haemodiafiltration
Duration of sessions (h)	5-2 (5-1-5-3)	continuous
Blood flow (mL per min)	278 (275-281)	146 (145-147)

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CRRT makes no difference even when compared to Low-grade SLEDD equivalent

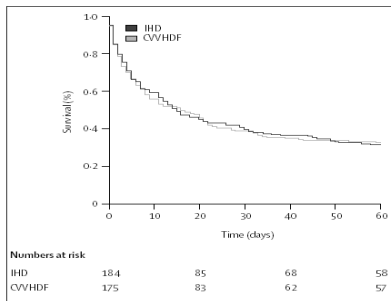


Figure 2: Estimation of survival rate according to treatment group  
 IHD=intermittent haemodialysis, CVVHDF=continuous venovenous haemodiafiltration.

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## SLEDD

- High level of safety and clinical efficacy
- Excellent and CRRT equivalent solute/acid-base control
- Excellent fluid control with hemodynamic stability
- Much cheaper
- All with bicarbonate as buffer
- Ergonomic advantages for nursing
- Patient mobility
- No need for prolonged anticoagulation

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You do not need CRRT to go to work....and help patients



It is expensive and dangerous

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SLEDD will do.....



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