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CL Lin<sup>1</sup> on behalf of the authors

<sup>1</sup>Department of Nephrology, Chiayi Chang Gung Memorial Hospital, Chiayi, Taiwan

Correspondence: CL Lin, Department of Nephrology, Chiayi Chang Gung Memorial Hospital, 613 6 West Chai-pu Road, Putzu city, Chiayi, Taiwan.

E-mail: [linchunliang@adm.cgmh.org.tw](mailto:linchunliang@adm.cgmh.org.tw)

## Mortality risk for patients receiving hemodiafiltration versus hemodialysis

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**To the Editor:** Canaud *et al.*<sup>1</sup> reported a significant 35% lower mortality risk with high-efficiency hemodiafiltration (HDF) compared to low-flux hemodialysis. Patients on HDF were slightly older, significantly heavier, and longer on renal replacement therapy (higher co-morbidity). Thus, they were possibly selected for HDF because of their higher risk profile.

We evaluated HDF data prospectively collected in EuCliD<sup>2</sup> from 56 clinics in Czech Republic, Hungary, Italy, and UK, all belonging to an International dialysis provider network. To reduce bias related to different dialysis doses, only patients on three times a week schedule achieving an  $eKt/V \geq 1.20$  were considered. Out of 2564 prevalent patients, 394 were treated with HDF and 2170 with hemodialysis over 12 months. Similarly, patients on HDF were heavier (67.6 versus 65.9 kg,  $P = 0.03$ ) and longer on renal replacement therapy ( $6.61 \pm 4.94$  versus  $4.97 \pm 5.05$  years,  $P < 0.001$ ); however, they were significantly younger ( $52.7 \pm 16.3$  versus  $59.7 \pm 16.1$  years,  $P < 0.001$ ). Furthermore, they were more likely to be diabetic (20.3 versus 18.3%) or affected by neoplasm (8.4 versus 6.7%). High-flux polysulfone was usually used. Data on replacement volume is not currently available but, as on-line HDF was standard, volumes are likely to be high (15–25 l).

HDF resulted in a significant 42.7% reduction in mortality risk (odds ratio: 0.573; 95% confidence interval: 0.377–0.873). After adjustment for age, gender, co-morbidities, and time on renal replacement therapy, mortality risk reduction was 35.3% (odds ratio: 0.647; 95% confidence interval: 0.419–0.991) and remained significant. In conclusion, our data confirm the results of Canaud *et al.*<sup>1</sup> However, epidemiological evaluations have limitations. The potential survival benefit of HDF must be tested by controlled clinical trials.

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T Jirka<sup>1</sup>, S Cesare<sup>2</sup>, A Di Benedetto<sup>2</sup>, M Perera Chang<sup>3</sup>, P Ponce<sup>4</sup>, N Richards<sup>5</sup>, C Tetta<sup>3</sup> and L Vaslaky<sup>6</sup>

<sup>1</sup>Fresenius Medical Care, Prague, Czech Republic; <sup>2</sup>NephroCare Italia, Napoli, Italy; <sup>3</sup>Fresenius Medical Care, Bad Homburg, Germany; <sup>4</sup>FME Dialysis Centre Almada, Almada, Portugal; <sup>5</sup>Fresenius Medical Care, Tipton, UK and <sup>6</sup>FME Dialysis Centre Sopron, Sopron, Hungary

Correspondence: M Perera Chang, Fresenius Medical Care, D-GmbH, Else-Kroener-Strasse 1, Bad Homburg 61352, Germany.

E-mail: [manuel.perera-chang@fmc-ag.com](mailto:manuel.perera-chang@fmc-ag.com)

## Response to 'Mortality risk for patients receiving hemodiafiltration versus hemodialysis'

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Jirka *et al.*<sup>1</sup> submit a very interesting letter confirming the results recently reported with the International Dialysis Outcomes and Practice Patterns Study.<sup>2</sup> They observed a 35.3% reduction rate in mortality risk in online hemodiafiltration (HDF)-treated patients belonging to an international dialysis care provider (Fresenius Medical Care, Bad Homburg, Germany), after adjustment for age, co-morbidities, and time on dialysis. These data were prospectively collected over 12 months through the European Clinical Database (Euclid) network in 56 clinics. This database includes 2564 prevalent hemodialysis patients, out of them 394 were treated by online HDF. Online HDF was comparable in terms of efficacy to the high-efficiency group of Dialysis Outcomes and Practice Patterns Study with a 15–25 l fluid exchanged per session and a  $K_t/V$  superior to 1.2. Today, it is not still well understood why these convective therapies are superior to hemodialysis. However, one can speculate that by enhancing both the removal of middle molecules toxins (e.g., B2M) and the biocompatibility of the dialysis system (ultrapurity of dialysate, highly permeable synthetic membranes), these methods improve substantially the efficiency and the quality of the delivered treatment.<sup>3</sup> As suggested by Jirka *et al.*<sup>1</sup> prospective controlled randomized studies hemodialysis versus HDF are missing. This lack will be certainly corrected with the three European ongoing studies on this topic.<sup>4</sup> This brief report is, nevertheless, a very strong support to our findings showing that high-efficiency convective therapies, such as online HDF, may offer an interesting alternative to improve dialysis patient outcomes.

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