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# CORRECTION OF FLUID OVERLOAD SUSTANTIALLY REDUCES MORTALITY IN STABLE VOLUME-EXPANDED HEMODIALYSIS PATIENTS.

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**INTRODUCTION AND AIMS**: Fluid overload (FO) is a major risk factor for the exceedingly high mortality of hemodialysis (HD) pts and adequate control of FO remains a largely unmet clinical need. There is still very limited evidence that correction of FO may translate into better clinical outcomes in HD pts.

**METHODS & PATIENTS:**

**-Incident patient cohort:** (n=39,556 patients (pts)) from NephroCare dialysis network in 26 countries.

**-Fluid volume assessment**: measured by whole body bioimpedance spectroscopy (BCM-Body Composition Monitor, Fresenius Medical Care). The BCM is a multifrequency bioimpedance device providing tissues intracellular and extracellular water compared with a database of normohydrated (NH) heathy subjects. It is measured before the dialysis session giving the amount of excess extracellular fluid (ECF). The relative fluid overload (**Rel FO**) is calculated: patient ECF- NH ECF/patient ECF (%).

**-Initially overhydrated patient selection (Figure 1)**: Fluid Overloaded (FO) pts (n=13352, 33.5%) were those who displayed evidence of Rel FO >13% in Males;>15% Females) in at least 2 consecutive measurements performed during the first 3 months (mo) of dialysis.

**-Follow-up of FO patients**: FO pts were further categorized based on fluid volume measurements performed during the ensuing 9 mo into 2 groups (*see Figure*). In **persistent-FO patients**, the fluid status was assessed 15±13 times and 16±12 times in the **corrected-FO patients** over 9 months) Thereafter, both groups were followed up for 17.5±10.9 months to assess whether achievement of a normal fluid volume associates with a reduced death risk in initially volume expanded, stable HD pts.

**Figure1: Patient selection flow-chart**

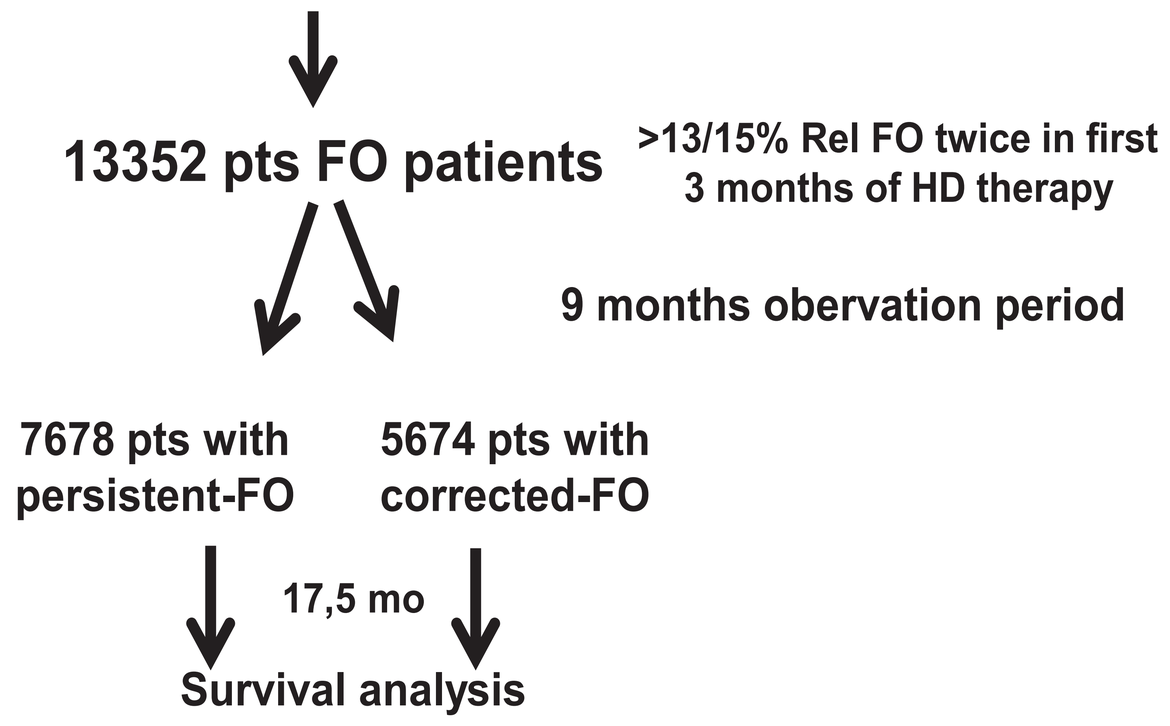
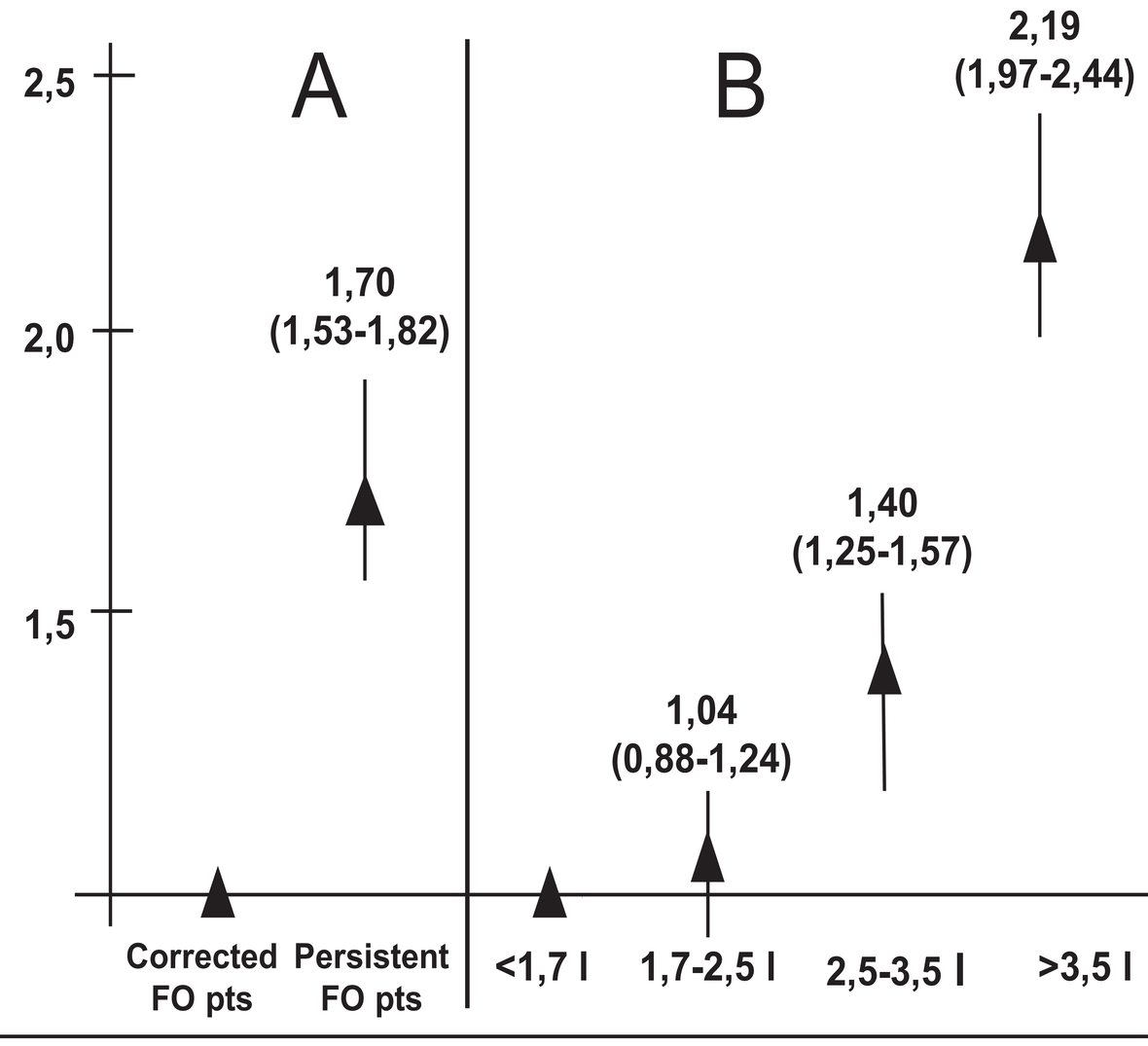



**Figure 2: Hazard-ratio related to FO during follow-up**




**RESULTS**: The **fully adjusted* death risk** of incident pts with FO persisting over the ensuing 9-mo was by the **70% higher (Figure 2A)** than that of initially volume expanded pts who achieved a normal fluid volume during the same period. When pts with persistent FO were divided into categories of increasing FO severity, the risk of death dose-dependently increased across the same categories **(Figure 2B**)). This dose dependent risk excess was unaffected by adjustment for confounders*.

**CONCLUSIONS**: In a multinational, incident cohort of HD pts, stable FO (defined on the basis of at least 2 fluid volume measurements during the first 3 months of HD treatment) had a 33% prevalence. **Correction of FO over the following 9 months** was associated with a **70% reduction in the death risk** and such a risk reduction was largely independent of BP and other factors and strictly proportional to the severity of FO. These findings **emphasize the potential benefit of fluid volume optimization** in HD pts and underscore the need of specific clinical trials aimed at testing the effect of treatment policies targeting FO in the same population.

*Adjustment for demographic, somatometric factors, treatment time, catheters use, smoking, ethnicity, BP, antihypertensive drugs, diabetes, CHD, HF, cerebrovascular disease, PVD, dementia, COPD, paraplegia, liver disease, connective tissue diseases, Kt/V, Protein Catabolic rate, Alb,Na,P,LDL,HDL,Cholest,CRP.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