

INFLUENCE OF AGE ON ANEMIA MANAGEMENT: DIFFERENCES AND COMMONALITIES BETWEEN COHORTS FROM A US AND A GERMAN REGISTRY

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Purpose:

The number of elderly patients on hemodialysis (HD) is increasing worldwide. Targets for anemia management are very similar between the US and Europe but they do not take patients age into account. We analyzed age effects on outcome parameters of anemia management using two cohorts of hemodialysis patients from the US and Germany.

Methods:

The study included all patients aged >18 years who received HD at the facilities of the Curatorium for Dialysis and Kidney Transplantation (KfH), Germany, and the Renal Research Institute (RRI), United States of America, in 2009. For comparability, only Caucasian patients were analyzed.

Methods (cont'd.):

Patients were divided into five different age groups: 18-59, 60-69, 70-75, 75-80, and >80 years. Etiology of ESRD, levels of hemoglobin (Hb), ferritin, transferrin saturation (TSAT), and dose of erythropoietin-equivalent (EPO) per kilogram weight post dialysis per dialysis treatment (Tx) were collected from the two electronic databases. The anemia goals were: total hemoglobin 10-12 g/dL, ferritin 200-500 ng/mL and TSAT >20%. Basic descriptive statistics were used to characterize the dataset and ANOVA to compare group differences for statistical significance.

Results:

There were 8638 patients in the KfH-cohort and 2446 patients in the RRI-cohort, respectively (Table 1). Diabetes was the most common cause of ESRD in both cohorts, but the absolute prevalence was higher in all age groups in the US patients.

Hb did not differ between countries or age groups ($p=0.35$; Figure 1A), nor did the fraction of patients with hemoglobin > 12 g/dL. Both ferritin and TSAT levels were higher in US patients, and did not change much with age (Figure 1B, C). In the US cohort EPO doses decreased with advancing age ($p<0.001$) while they slightly increased in the German cohort ($p<0.001$). The dose of EPO was higher in the US in all age groups compared with German patients ($p<0.001$).

	Group 1 18-60 years		Group 2 60-69 years		Group 3 70-74 years		Group 4 75-80 years		Group 5 > 80 years		P
	KfH	RRI	KfH	RRI	KfH	RRI	KfH	RRI	KfH	RRI	
N	3520	787	2605	637	1018	318	1106	283	389	421	
DM [%]	21.0	27.2	33.0	46.3	30.0	43.4	28.0	43.8	20.0	31.8	0.03
Hb [mg/dL]	11.5±0.8	11.5±1.0	11.5±0.8	11.6±0.8	11.5±0.8	11.5±0.8	11.5±0.8	11.5±0.8	11.5±0.8	11.5±0.7	0.4
% achieving Hb targets	71.5	66.6	72	70.2	70.9	72.6	72.2	74.2	76.4	72.7	<0.01
Ferritin [ng/ml]	635±405	721±479	671±394	851±697	710±423	817±502	701±434	849±529	716±461	778±492	<0.01
% achieving Ferritin targets	32.6	27.3	31.3	22.4	31.1	21.4	29.2	18.4	28.3	27.1	<0.005
TSAT [%]	26.8±10.2	32.7±9.6	26.0±9.5	32.1±9.2	26.2±9.6	32.0±8.0	26.0±9.7	31.7±8.4	26.5±9.5	31.7±9.1	<0.001
% achieving TSAT targets	76.2	93.5	74.2	94.8	75.4	95.3	74.3	92.2	75.6	93.3	<0.001
EPO per treatment [IU/kg/Tx]	29.7±24.7	99.1±99.2	30.1±24.5	89.0±88.2	31.3±26.5	82.0±85.0	32.0±26.3	84.4±83.5	32.0±25.9	79.5±69.9	<0.001

Table 1: Results of anemia management parameters of HD-patients > 18 years treated in Germany (KfH) and the US (RRI). DM: Diabetes Mellitus, Hb: hemoglobin, TSAT: transferrin saturation, EPO: erythropoietin

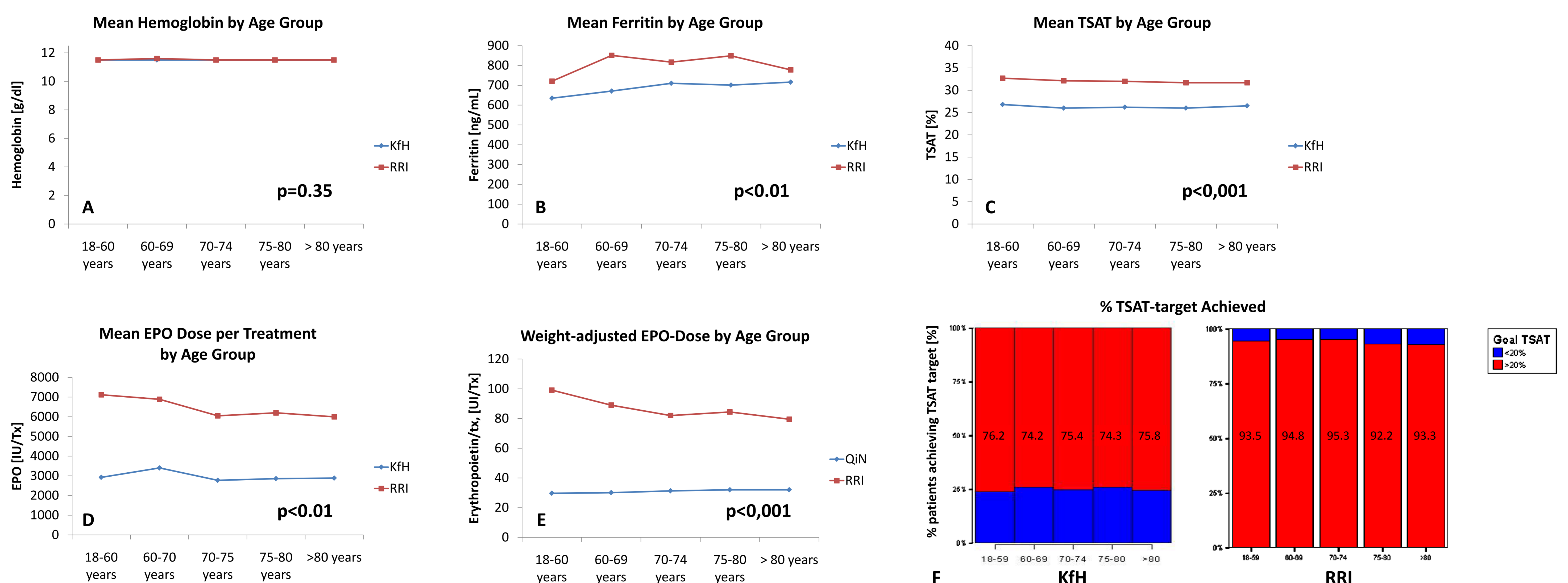


Figure 1 A, B, C, D, E, F: Parameters of anemia management by age group. P-value indicates significant differences between age groups.

Conclusions:

Even though there were no clinically significant differences in Hb, ferritin and TSAT levels between age groups, there were opposite trends in EPO requirements with advancing age in the German and US patients. The EPO dose used in US patients was up to three times higher than in Germany.

* Equal contribution