

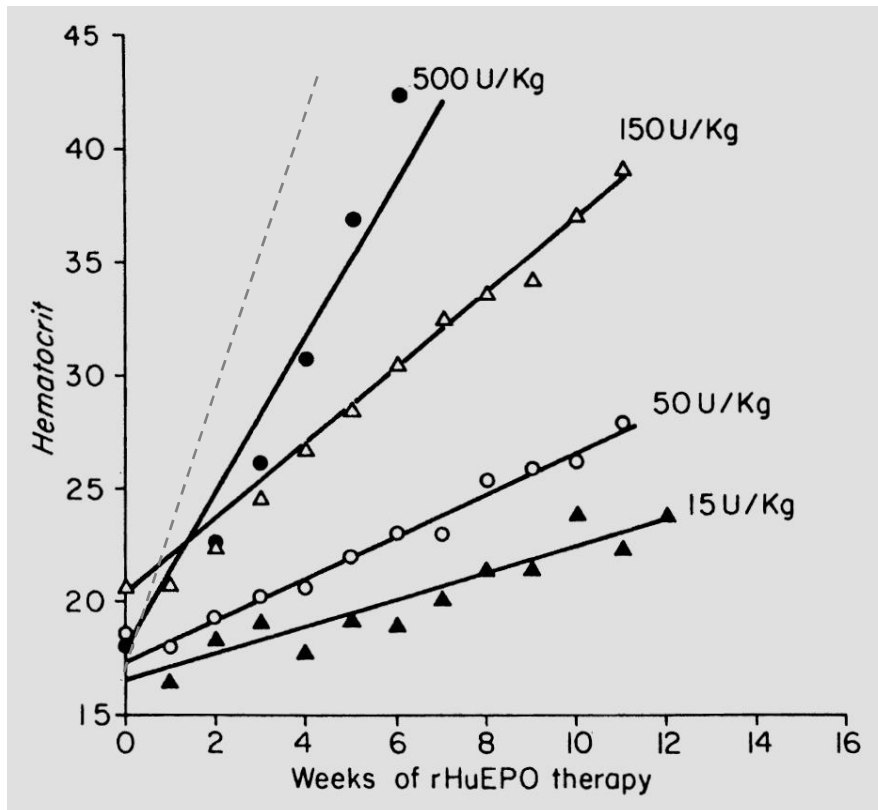
Medikamentöse Therapie bei Nieren- insuffizient – *hopes and hypes* **Anämietherapie**

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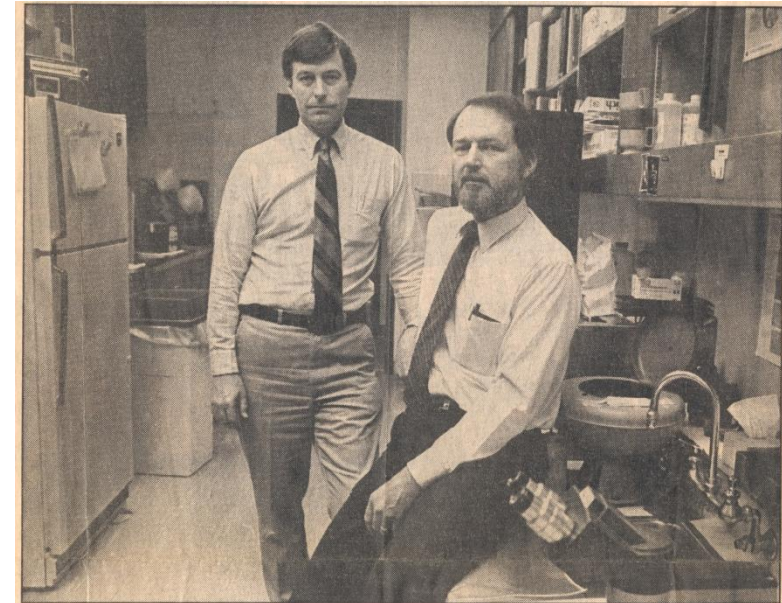


Vor mehr als 25 Jahren



Treatment of dialysis patients with recombinant human EPO (epoetin alfa)

Eschbach et al., *NEJM* 1987



Drs. John Adamson and Joseph Eschbach have helped develop a hormone injection **that makes life safer and more pleasant for kidney dialysis patients.**

Seattle Times, 1987

Anämietherapie

- **Hope**



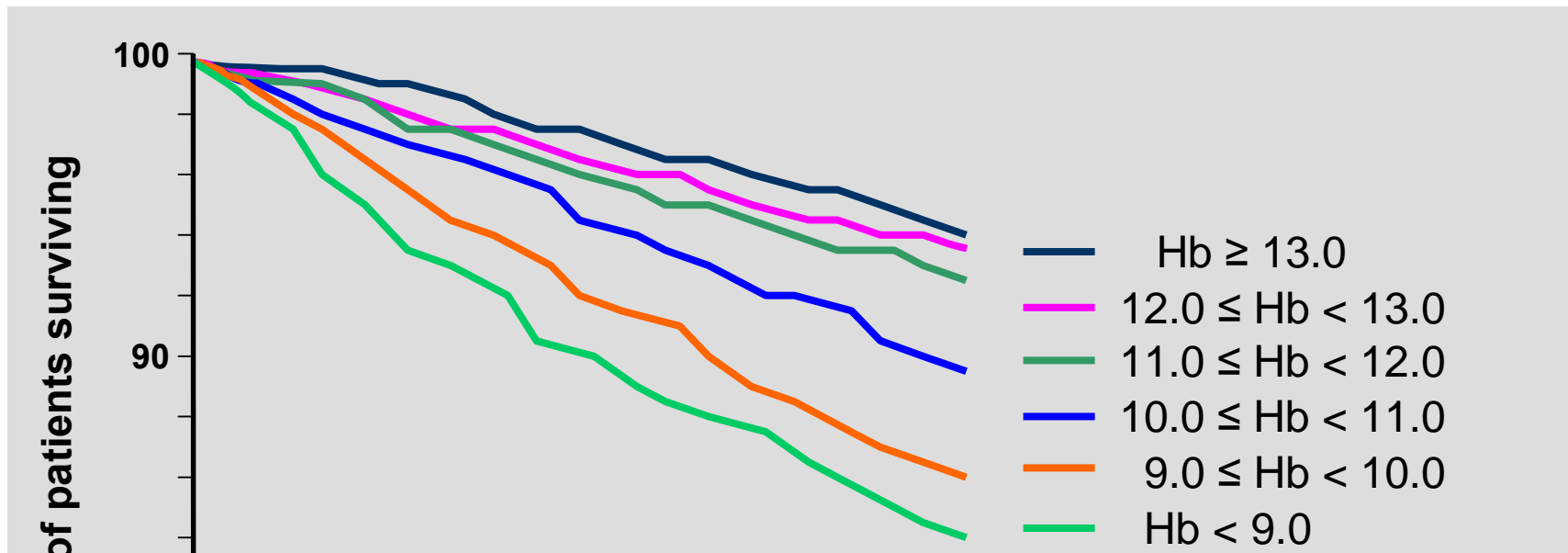
- **Hype**

... reduziert Transfusionsbedarf
... verbessert Lebensqualität



Assoziation zwischen Hb-Werten und Prognose

Fresenius Medical Care, North America (N=44,550)



Anämie ist assoziiert mit

... Mortalität

... Kardiovaskulärer Morbidität, insbesondere LVH

... Progression der Niereninsuffizienz

...

Anämietherapie

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... verbessert die Prognose
(Progression der Niereninsuffizienz;
Morbidity, Mortalität)

RCTs of anemia management in CKD-HD

Study	n	Hb at inclusion	CVD at inclusion	Lower target	Higher target	Primary endpoint			
						Parameter	higher	lower	P value
US-NHT Besarab et al. NEJM 1998	~1,200	8–11	IHD or CHF	10	14	Death or non-fatal MI	183 plus 19	150 plus 14	ns
Parfrey et al. JASN 2005	~600	<11	Not symptomatic, No LV dilatation	9.5-11.5	13.5-14.5	Change in LV volume	7.6 %	8.3 %	ns

Besarab A et al. *N Engl J Med* 1998
Parfrey P et al. *JASN* 2005

RCTs of anemia management in CKD-ND

Study	n	Hb at inclusion	eGFR at inclusion	Lower target	Higher target	Primary endpoint			
						Parameter	higher	lower	P value
CREATE Drüeke et al. NEJM 2006	~600	11–12.5	15–35	10.5–11.5	13–15	CV event (8)	58	47	ns
CHOIR Singh et al. NEJM 2006	~1,400	<11	15–50	11.3	13.5	death or CV event (3)	125	97	p<0.03
TREAT Pfeffer et al. NEJM 2009	~4,000	≤11	20–60	none (>9)	13	death or CV event (4)	632	602	ns

Drüeke TB et al. *N Engl J Med* 2006
 Singh AK et al. *N Engl J Med* 2006
 Pfeffer MA et al. *N Engl J Med* 2009

Increased risk of stroke in TREAT

Most recent (90d)	Darbepoetin			Placebo		
	Stroke Cases (101)	Non Stroke Controls (1010)	P value	Stroke Cases (52)	Non Stroke Controls (520)	P value
Systolic BP (mmHg)	135 (120–150) N=86	134 (121–145) N=923	0.98	136 (122–148) N=44	137 (124–150) N=468	0.53
Diastolic BP (mmHg)	72 (64–80) N=86	72 (66–80) N=923	0.60	70 (63–80) N=44	72 (64–80) N=468	0.76
Haemoglobin (g/dL)	12.3 (11.1–13.1) N=80	12.5 (11.7–13.2) N=866	0.09	10.4 (9.4–10.8) N=42	10.4 (9.7–11.3) N=438	0.24
Platelets (1,000/dL)	230 (172–301) N=39	225 (185–281) N=470	0.86	225 (182–291) N=26	236 (194–281) N=253	0.44
Dose	150 (100–300) N=80	150 (80–300) N=866	0.79	0 (0–0) N=42	0 (0–0) N=436	0.40

Anemia correction in patients with heart failure

Treatment of Anemia with Darbepoetin Alfa in Systolic Heart Failure

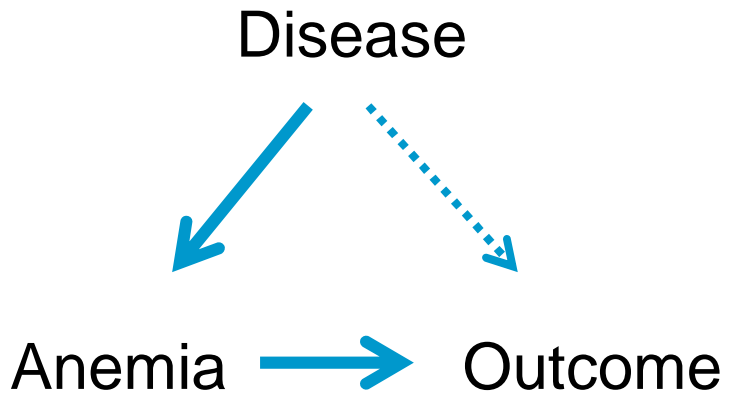
Karl Swedberg, M.D., Ph.D., James B. Young, M.D., Inder S. Anand, M.D.,
Sunfa Cheng, M.D., Akshay S. Desai, M.D., Rafael Diaz, M.D.,
Aldo P. Maggioni, M.D., John L. V. M.,
Christopher O'Connor, M.D.,
Scott D. Solomon, M.D., Yan S.,
and Dirk J. van Veldhuisen
for the RED-HF Committees and Investigators

mean eGFR
45.6 ml/min x 1.73 m²

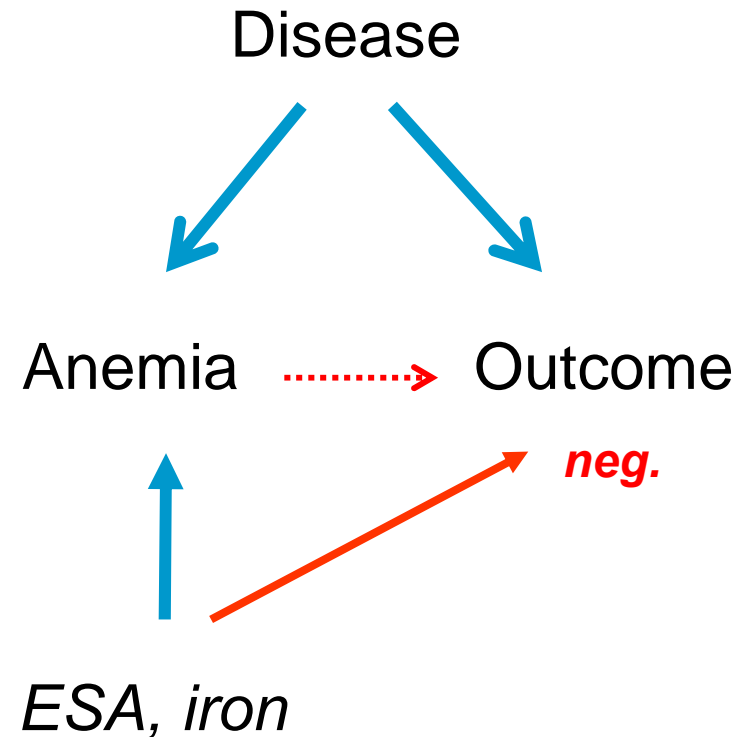
- Patients with systolic heart failure and anemia (Hb 9-12 g/dL)
 - Treated with darbepoetin (target 13g/dL) or placebo
 - Primary end-point: death from any cause or hosp. for worsening of HF
- No difference in primary endpoint, but more thromboembolic events

Risk Marker vs Risk Factor

HOPE



REALITY



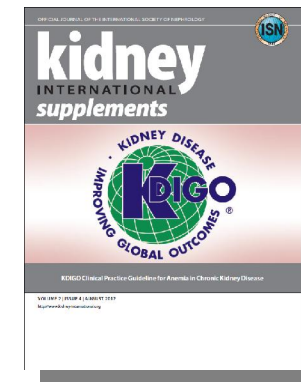
Anämietherapie

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- **Moderation**

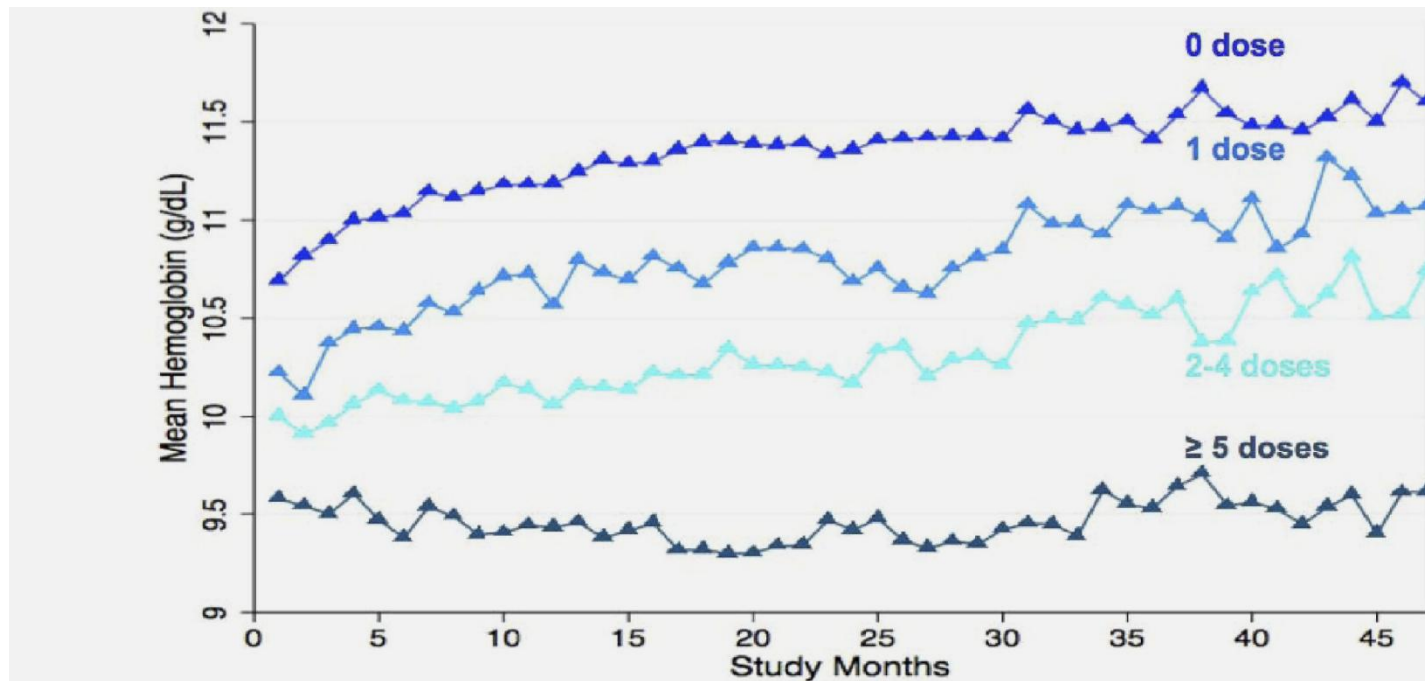
nicht Hb > 13 g/dl anstreben
Hb-Abfall < 9 g/dl vermeiden



CKD-ND: nur zum Teil behandeln, u.U. intermittierend

Placebo-arm in TREAT

N (% transfused)



1106 (15.7)

321 (24.0)

324 (37.4)

268 (46.3)

No. of Patients

No dose	1106	994	873	784	649	537	420	307	209	143
1 dose	321	286	239	217	175	138	107	76	49	32
2-4 doses	324	304	249	204	169	137	101	66	43	35
≥5 doses	268	264	249	214	183	147	120	80	55	36

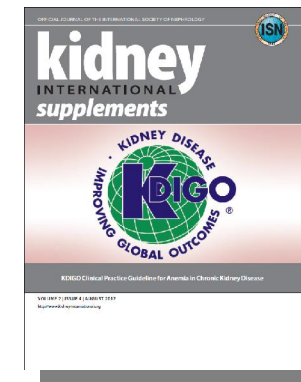
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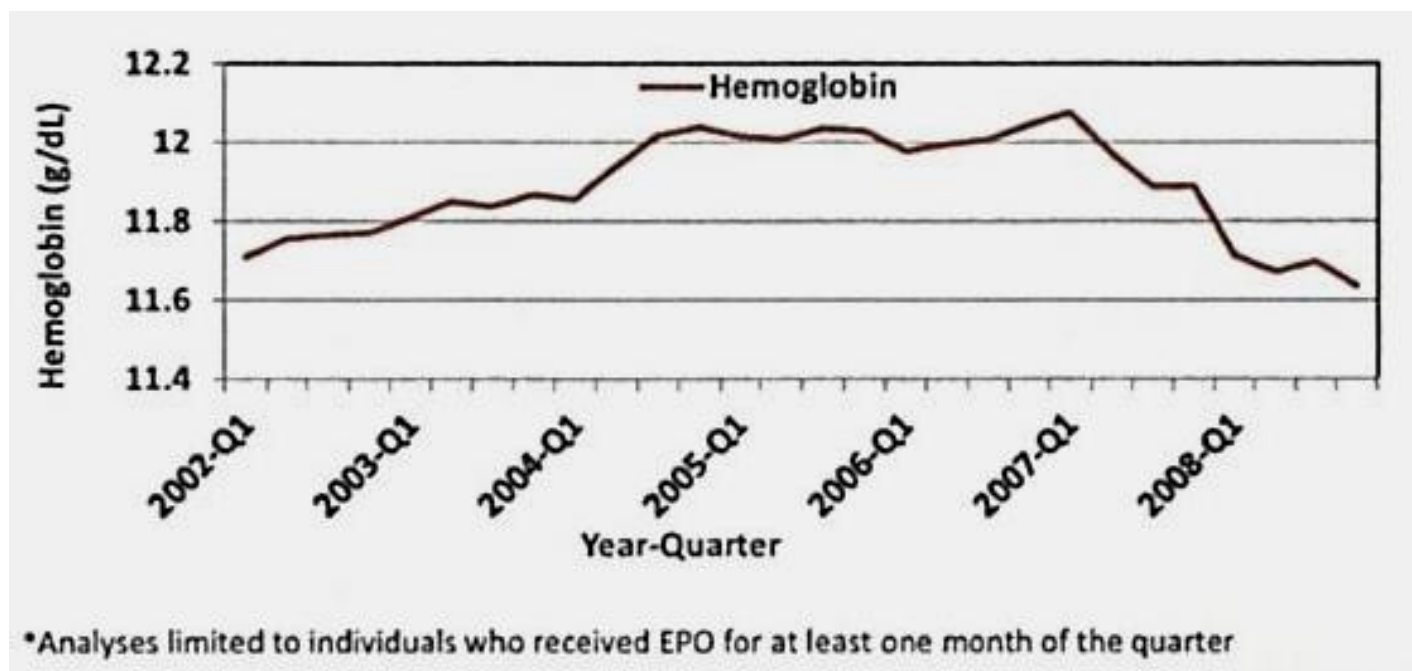
CKD-ND: nur zum Teil behandeln, u.U. intermittierend
CKD-HD: i.d.R. behandeln

Changing patterns of anemia management

HOPE

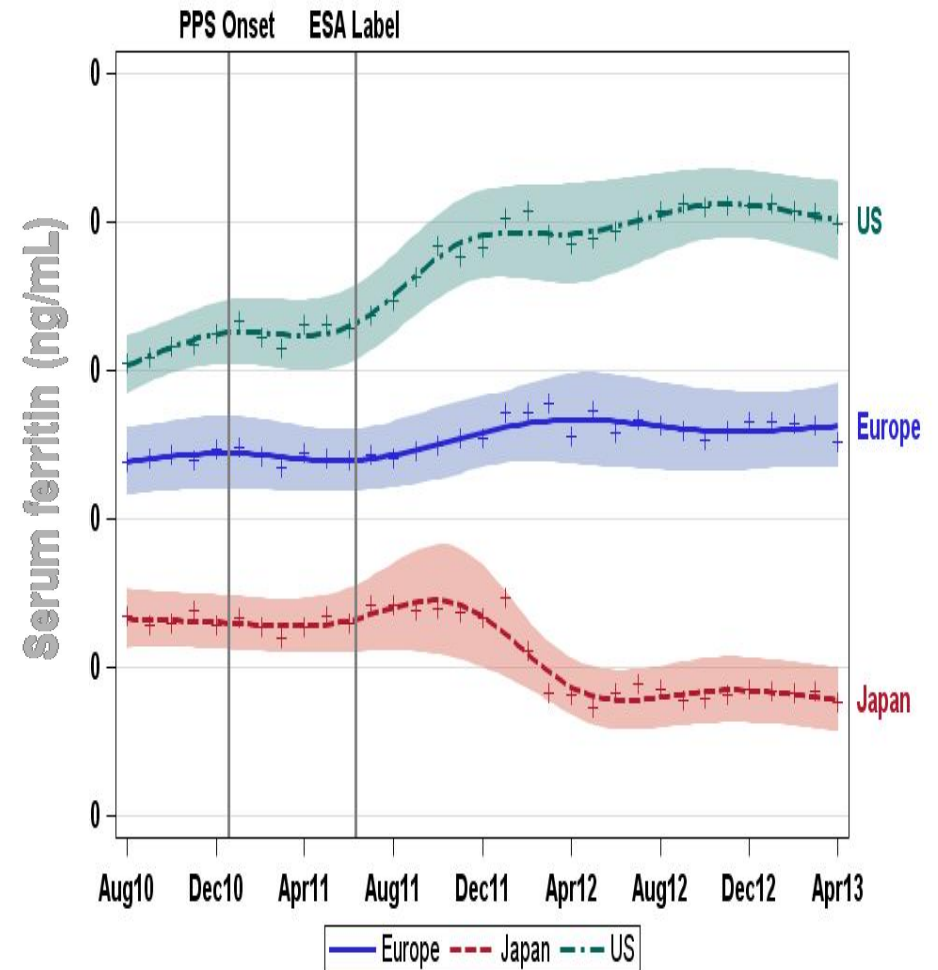
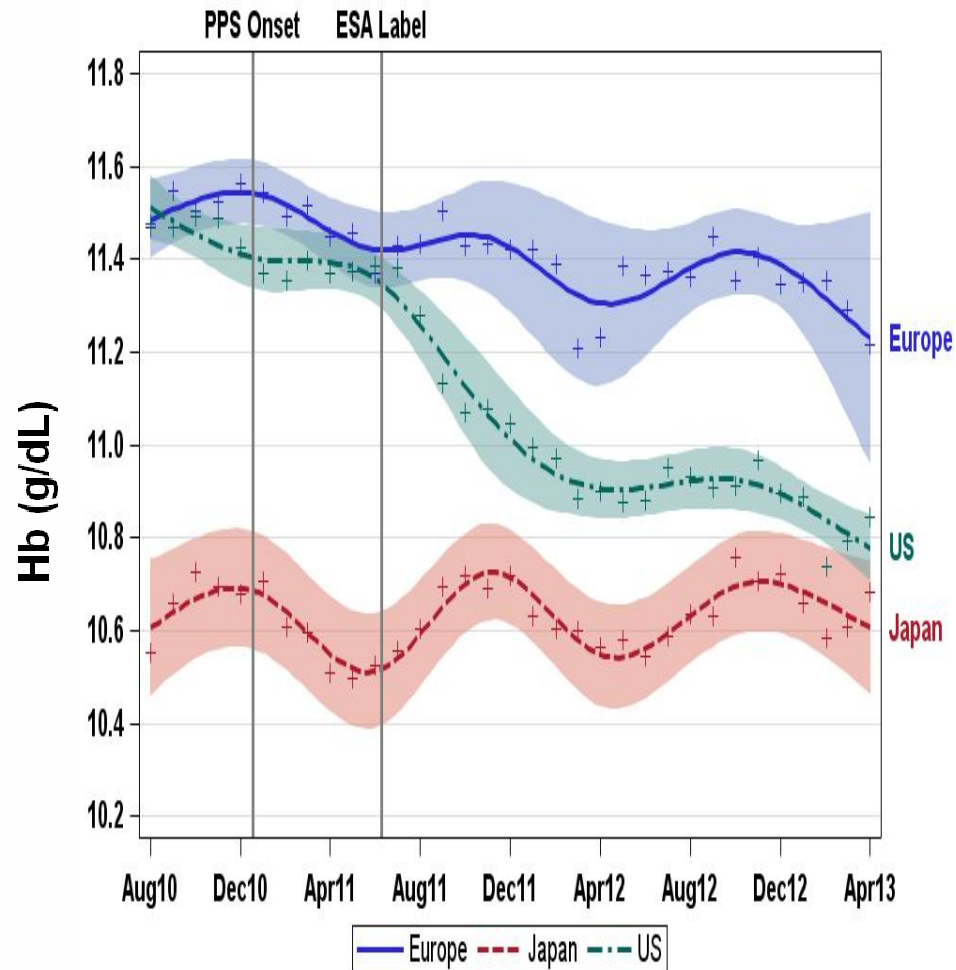
HYPE

MODERATION ...



USRDS data on Medicare hemodialysis patients

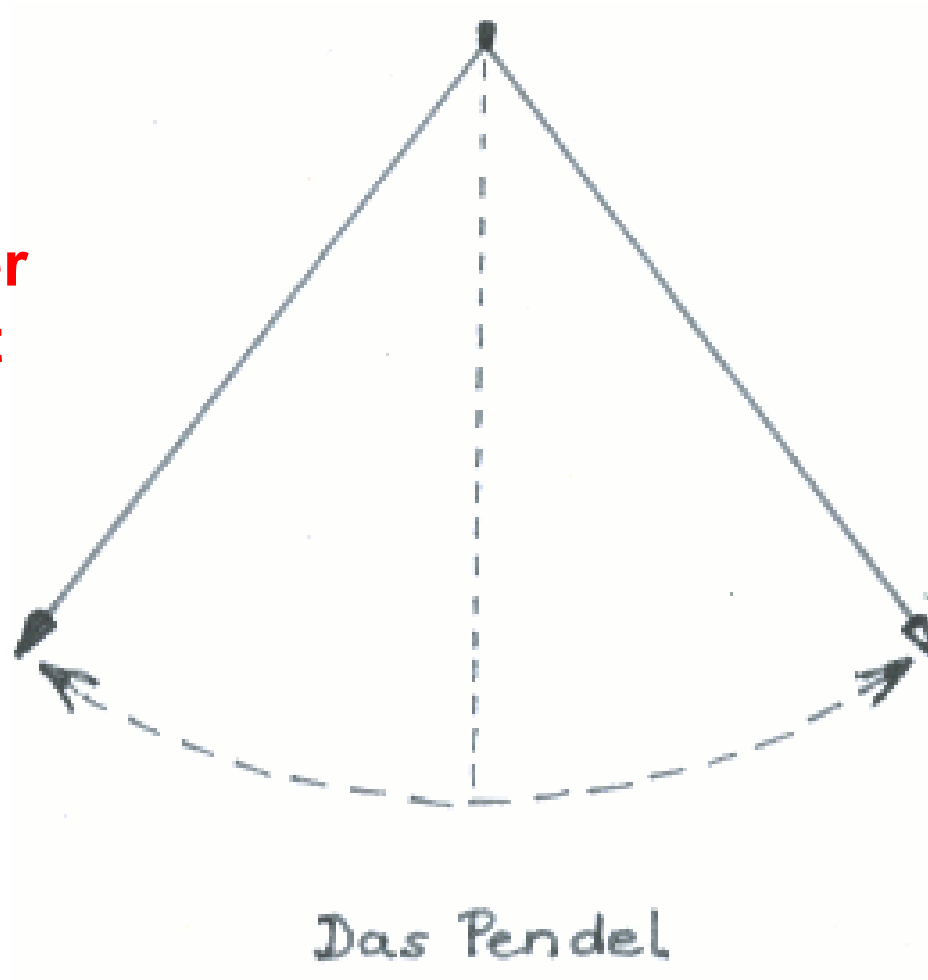
Current trends in anemia management



25 Jahre Anämietherapie

**normaler
Hb-Wert**

**schwere
Anämie**



Eisenmangel

Eisenüberladung