

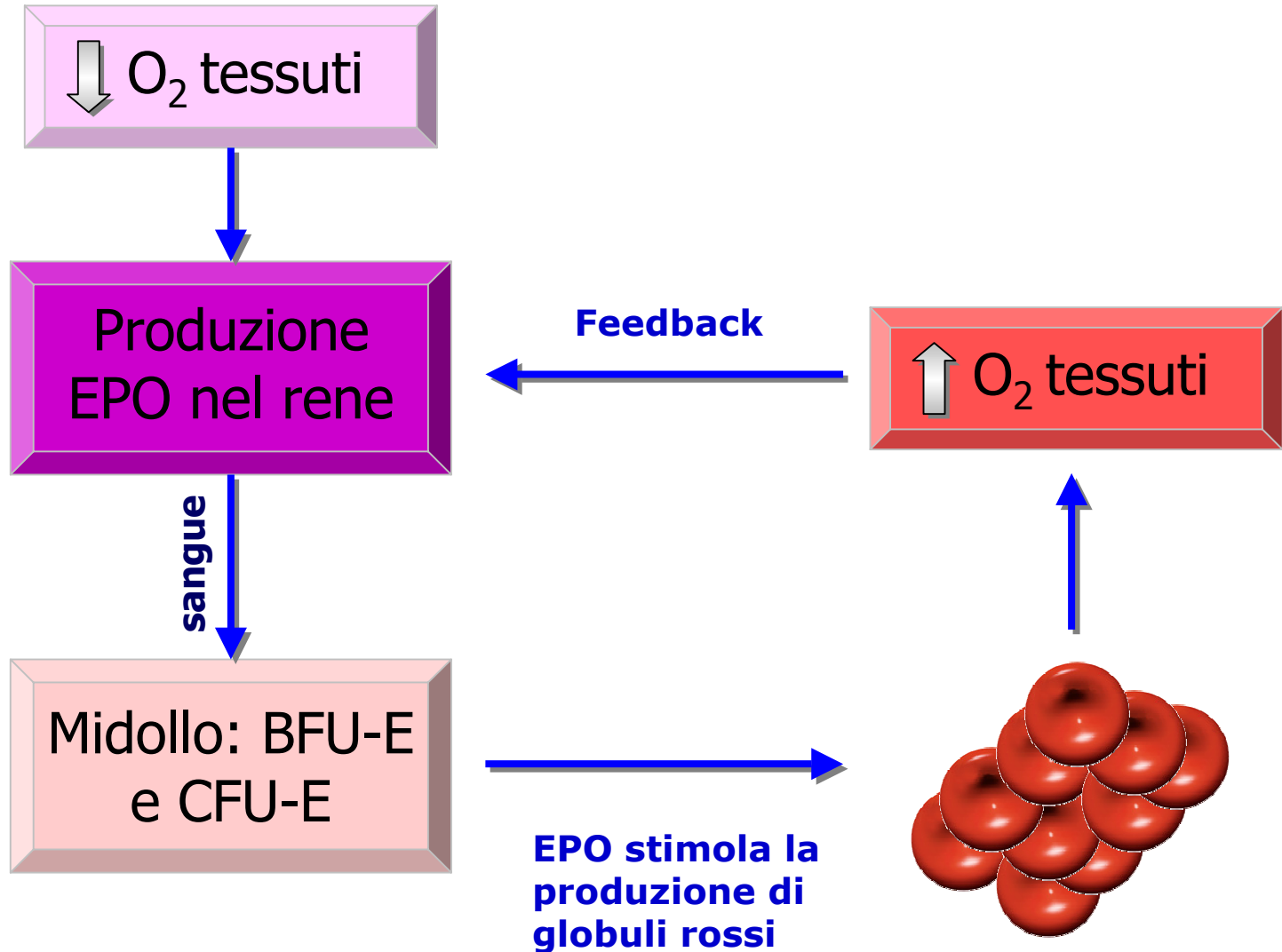


**Cattedra di Nefrologia
Seconda Università di Napoli**

**Insufficienza renale cronica:
perché trattare l'anemia**

Roberto Minutolo

EPO e regolazione eritropoiesi



Deficit di EPO

Anemia in CKD

Perdite ematiche occulte

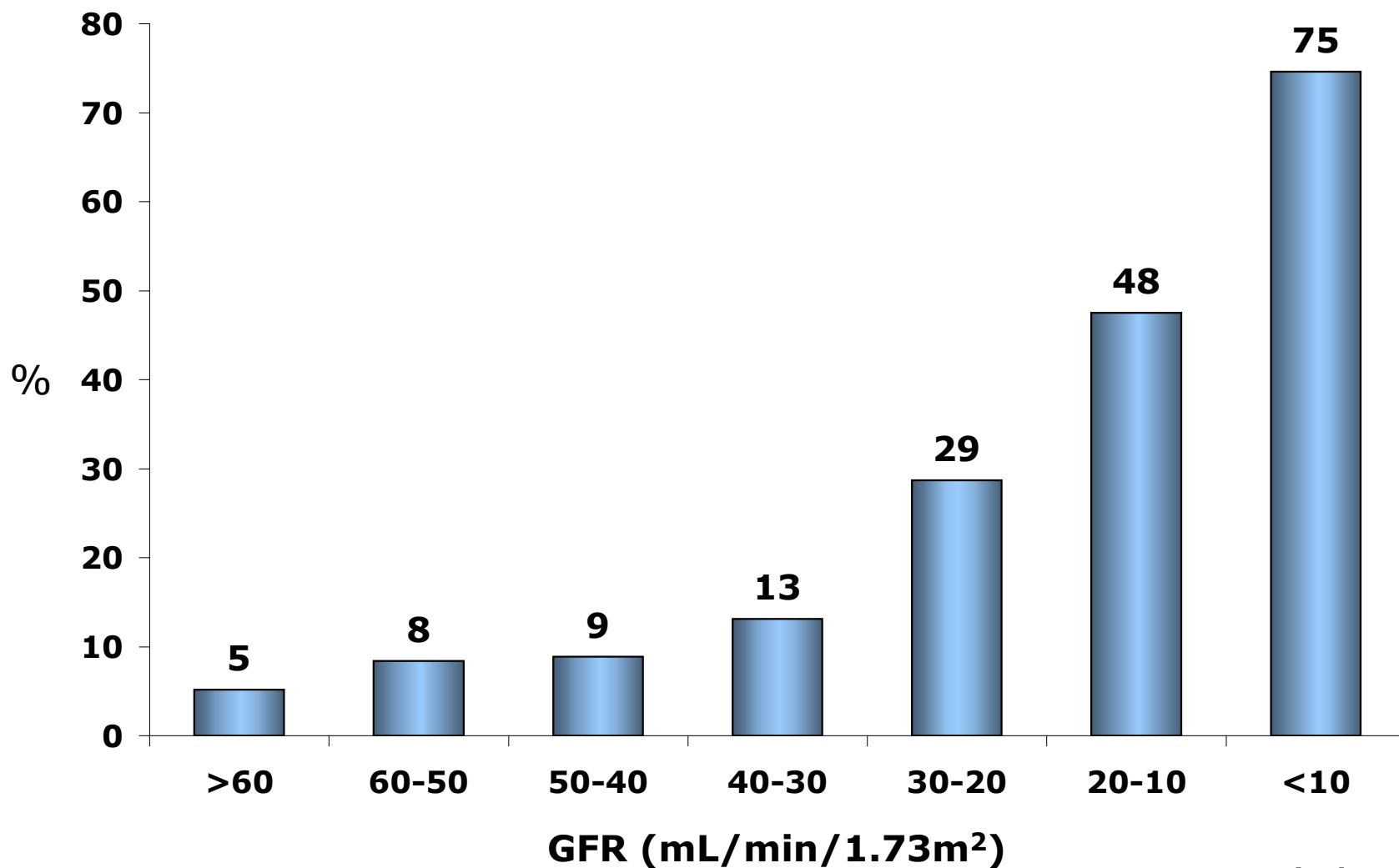
↓ Emivita delle emazie

Tossine Uremiche

Aumento PTH

Deficit di ferro

Prevalenza di anemia (Hb <11 o terapia con EPO) in base alla funzione renale (studio TABLE)



**Kidney Disease as a Risk Factor for Death
and Cardiovascular Disease**

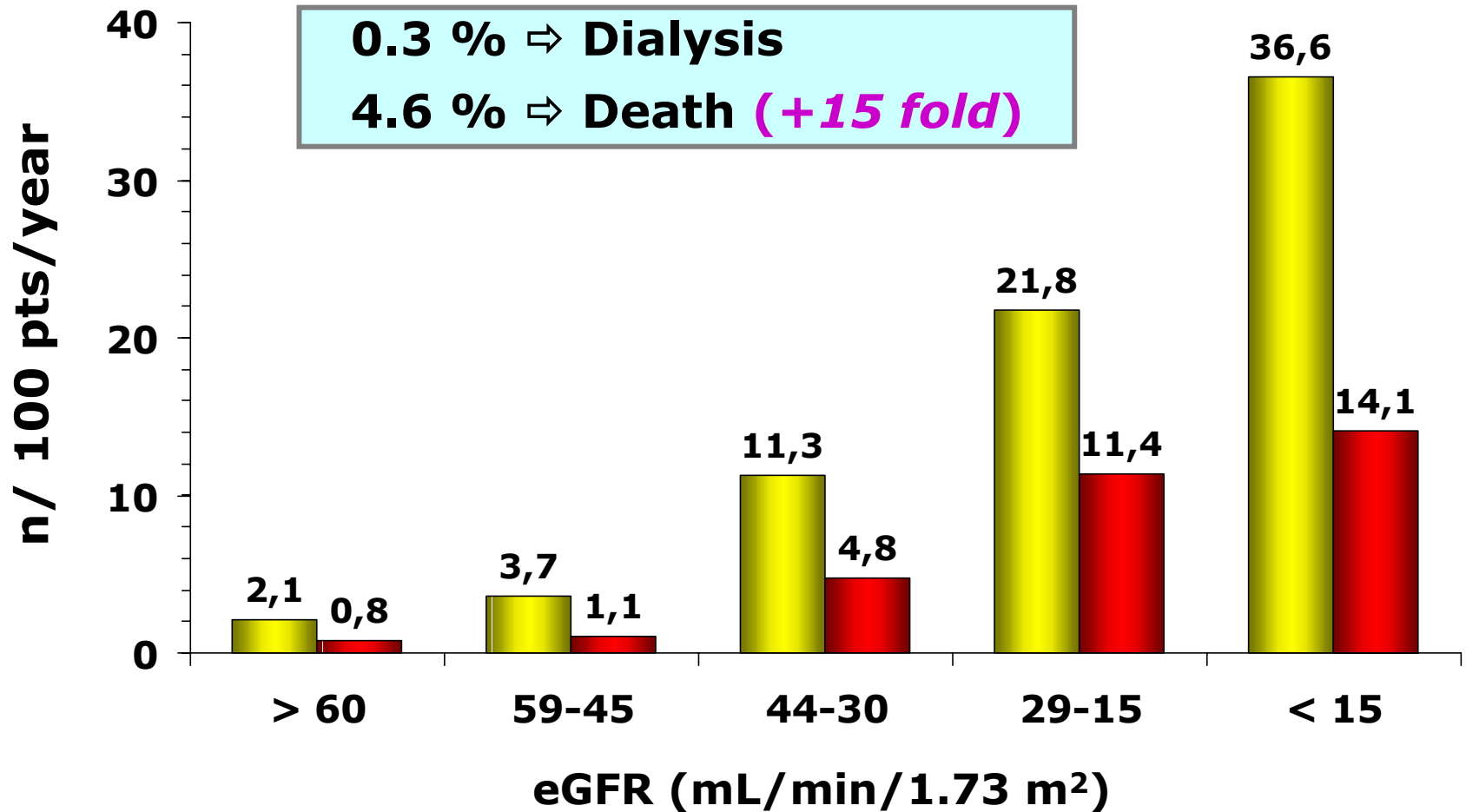
A Statement From the American Heart Association Councils on Kidney in Cardiovascular Disease, High Blood Pressure Research, Clinical Cardiology and Prevention

Rischio Cardio-Renale

Traditional Risk Factors	Nontraditional Factors
Older age	Albuminuria
Male sex	Homocysteine
IPERTENSIONE	ALBUMINURIA
Lower HDL cholesterol	Anemia
DISLIPIDEMIA	ANEMIA
Physical inactivity	Electrolyte imbalance
FUMO	↑ CaxP
Family history of CVD	Inflammation (C-reactive protein)
IPERGLICEMIA	Malnutrition
	Thrombogenic factors
	Sleep disturbances
	Altered nitric oxide/endothelin balance

Rischio cardio-renale in CKD

(US-Kaiser Permanente; N=1.120.295; FU: 2.8 anni)



Effetti cardiovascolari dell'anemia

- **↑ Gittata Cardiaca**
- **↓ Resistenze Vascolari Periferiche**
- **↓ Apporto di Ossigeno al Miocardio**
- **↑ Sistema Simpatico**
- **Ipertrofia (eccentrica) del Ventricolo Sn**
- **Scompenso Cardiaco**



**ANEMIA nell'IRC
non-dialitica ?**

La popolazione di pazienti in dialisi (ESRD) rappresenta la "punta dell'iceberg"



ESRD

1
100

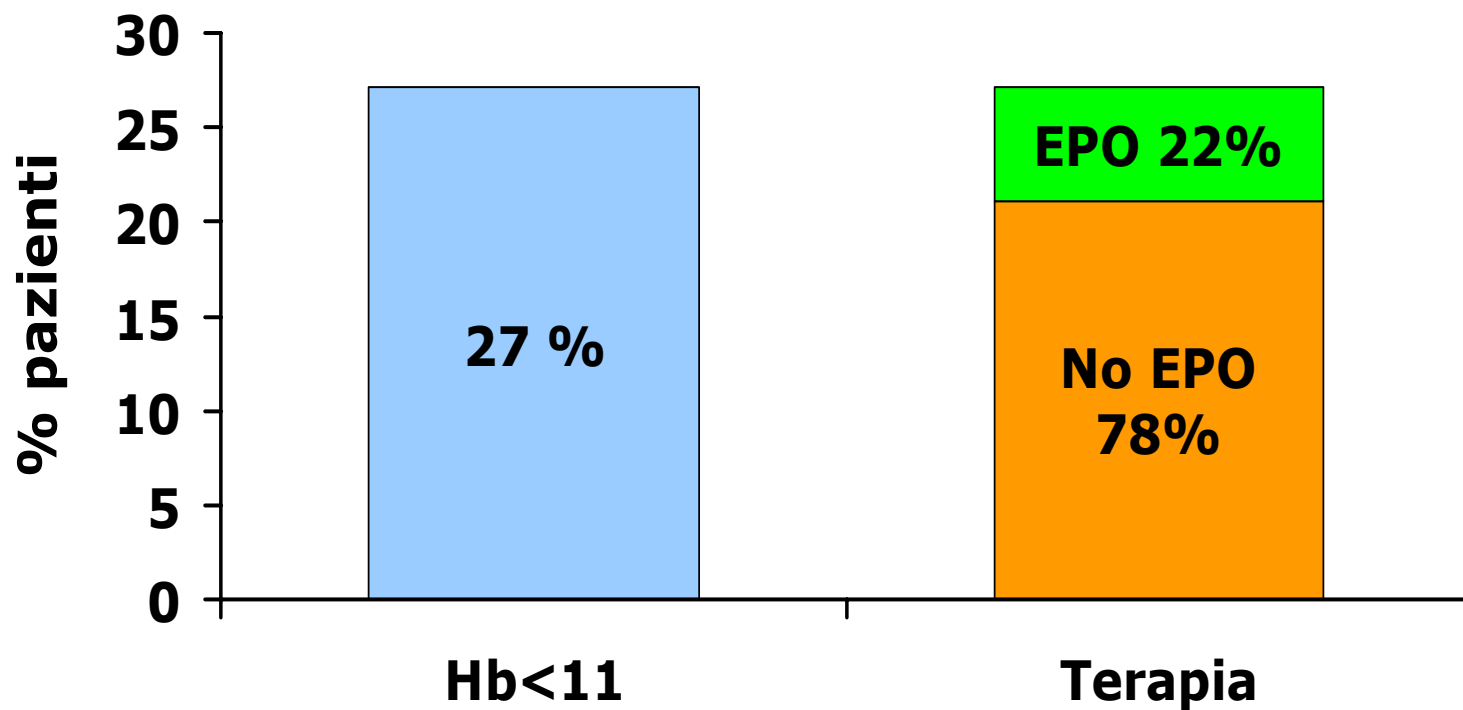
I.R.C.

Stima prevalenza IRC stadio 3-5 in Italia

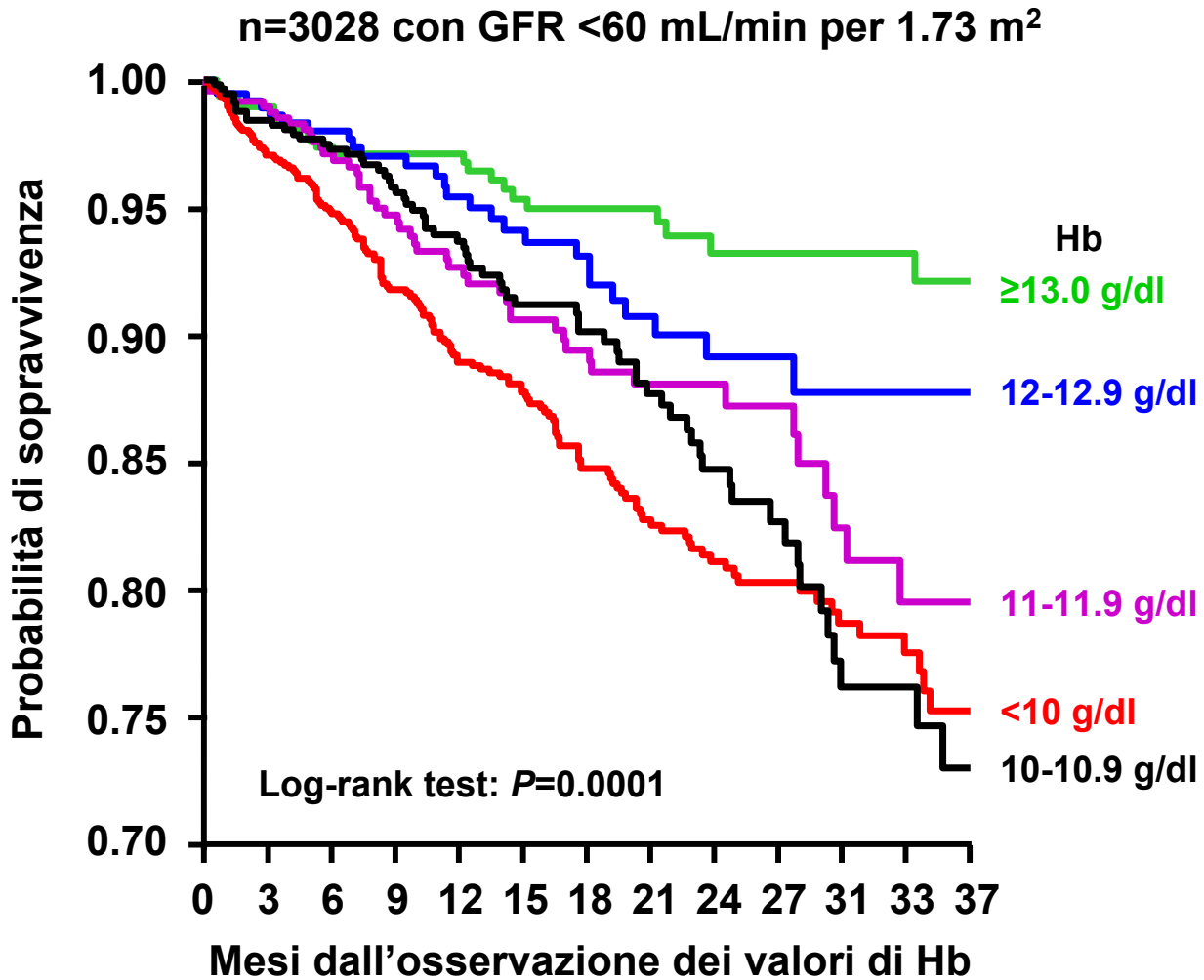
	Totale: 9.4 %
Stima in Italia dei pazienti IRC (no-dialisi) anemici: 780.000	
	Stadio 5: 0.4
Paz. Dialisi/pre-dialisi	1/100

ANEMIA & EPO in CKD:

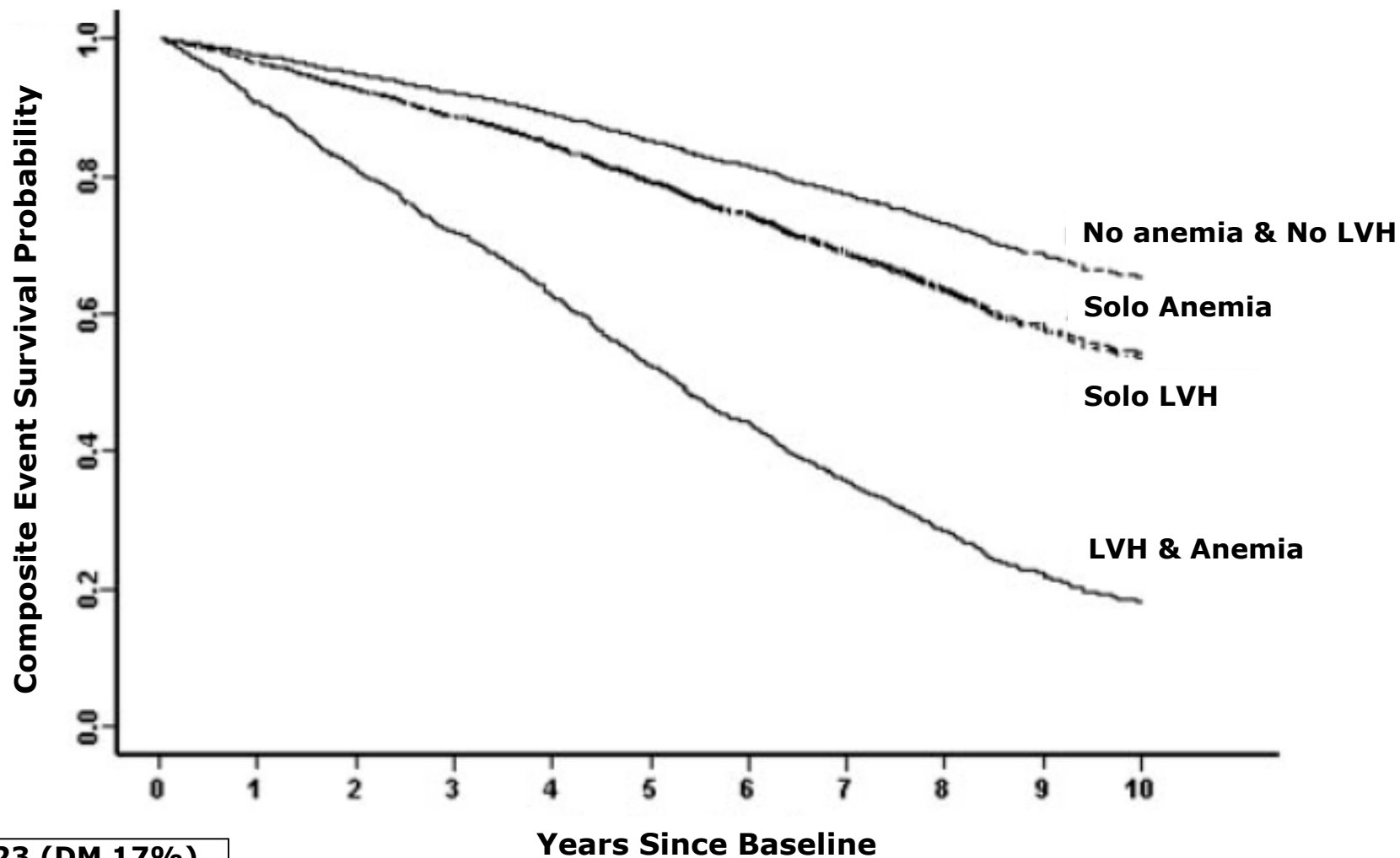
dati nelle Nefrologie italiane (Studio TABLE)



I livelli di Hb permettono di prevedere la sopravvivenza prima dell'inizio della dialisi



Effects of Anemia and Left Ventricular Hypertrophy on Cardiovascular Disease in Patients with Chronic Kidney Disease



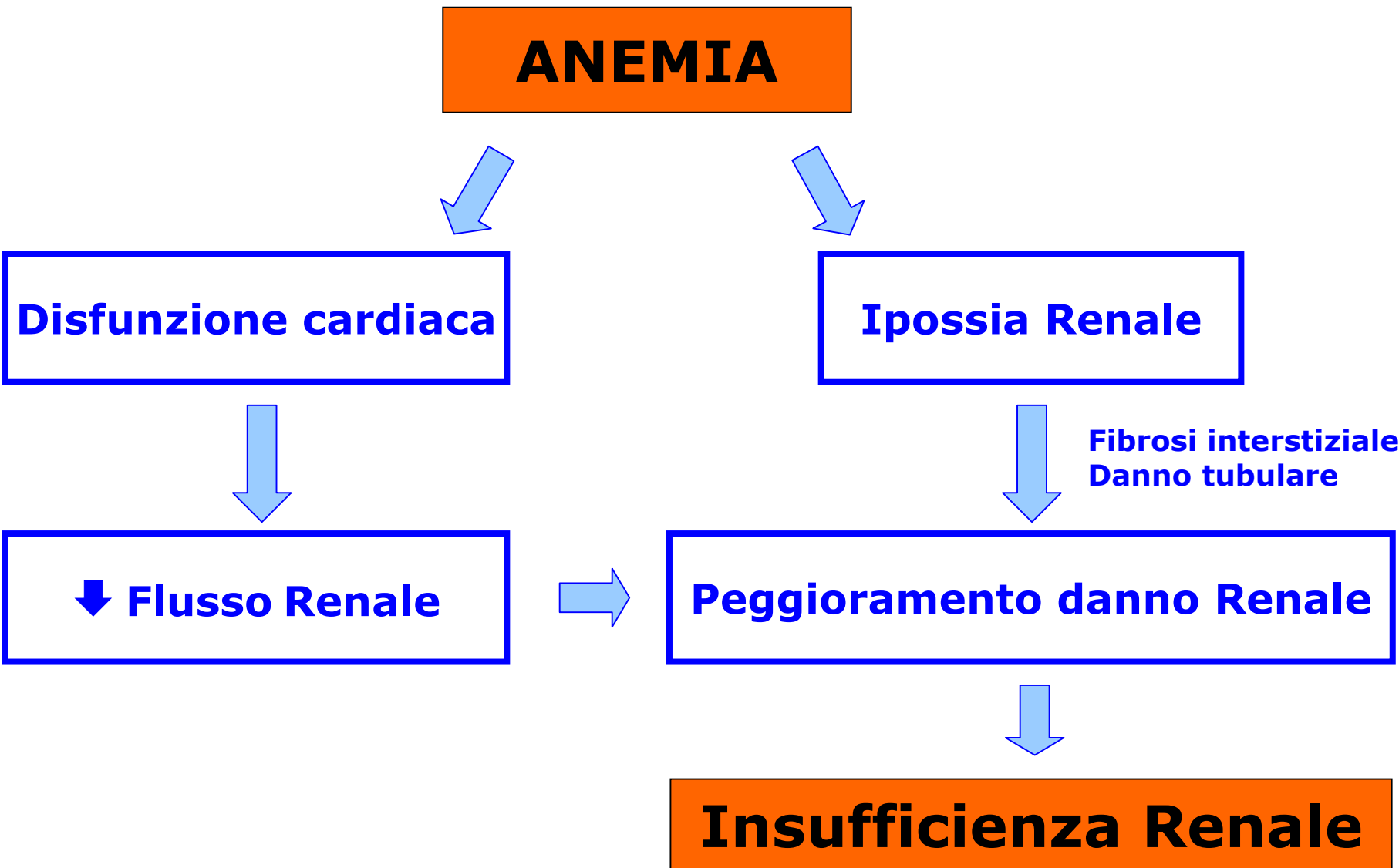
N= 2,423 (DM 17%)

Follow-up: 8.5 years

eGFR: 15-60 mL/min

Weiner, J Am Soc Nephrol 2005

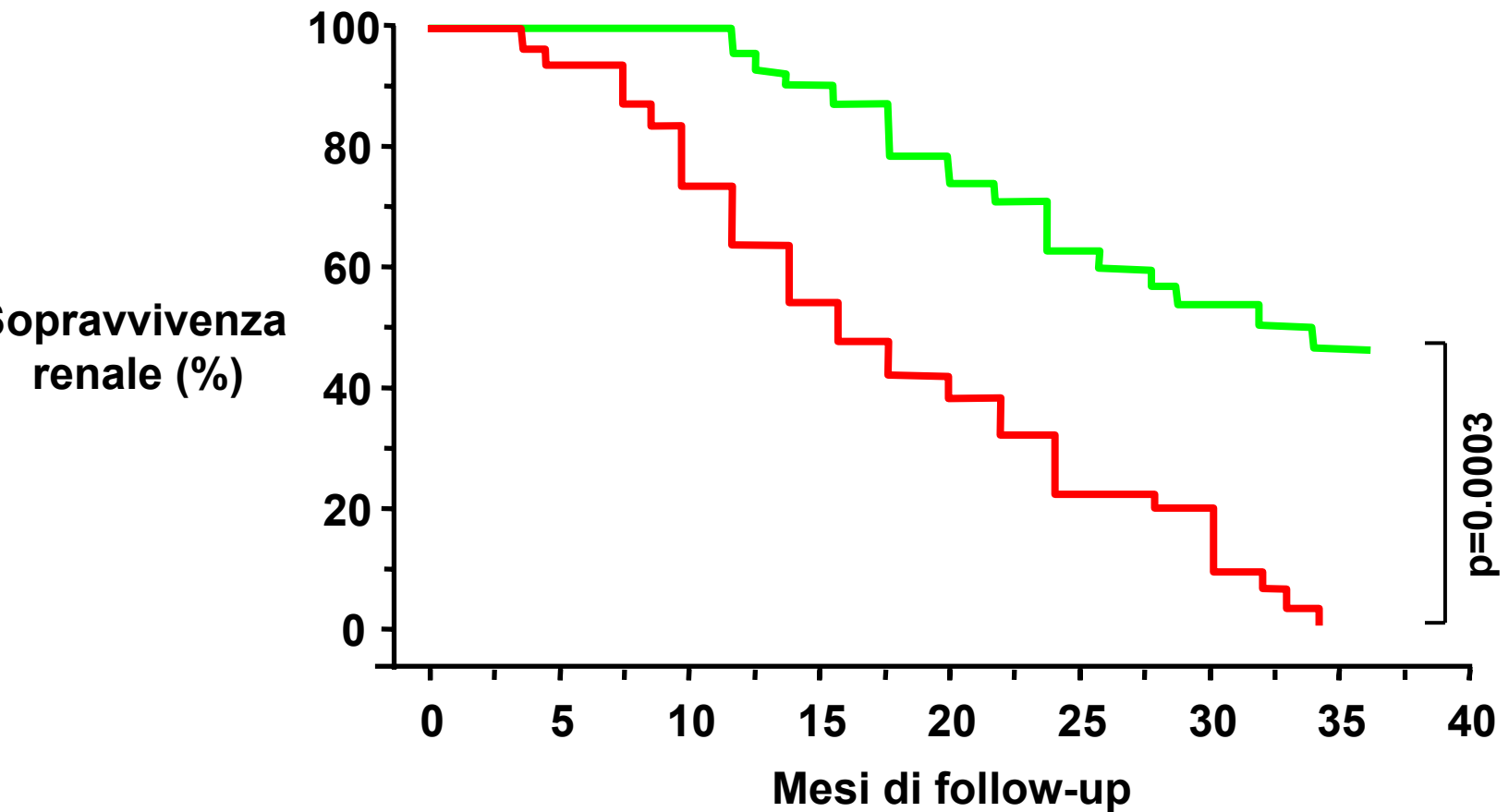
Anemia e progressione dell'IRC



Trattamento dell'anemia e progressione IRC

n: 108; sCreat: 2-4 mg/dL
RCT, FU: 36 mesi

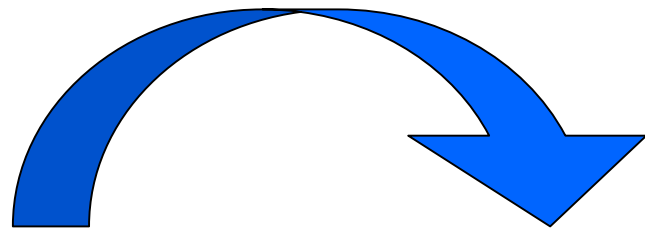
- Anemici-Trattati (Hb: 9.0 ⇨ 10.7)
- Anemici-Non Trattati (Hb: 9.3 ⇨ 8.4)



Trattamento dell'anemia e progressione IRC

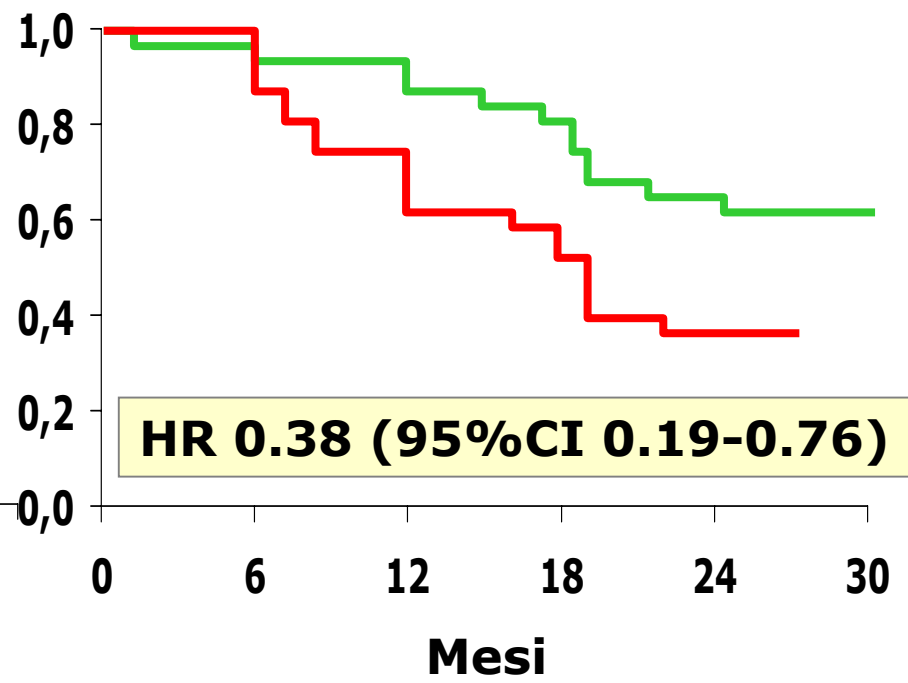
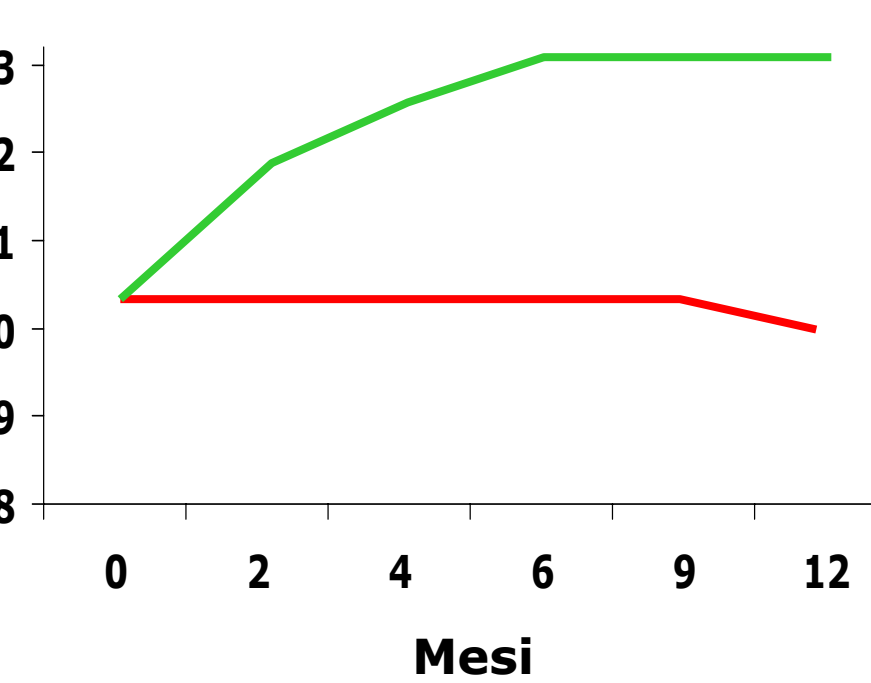
Tx precoce (target Hb 13), n=45

Tx tardivo (solo se Hb<9), n=43



Hb (g/dL)

Sopravvivenza renale

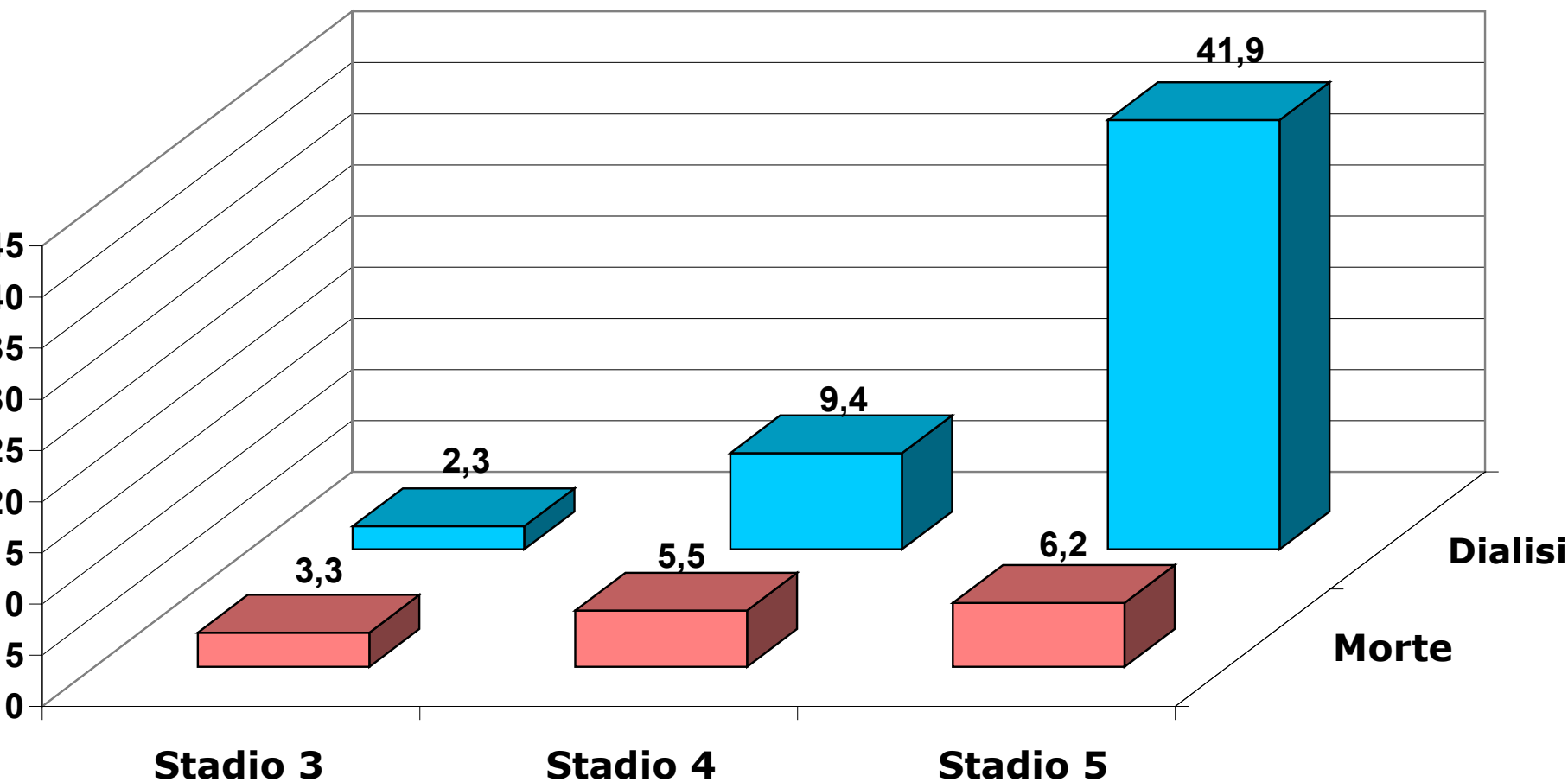


Morte Renale (studio TABLE)

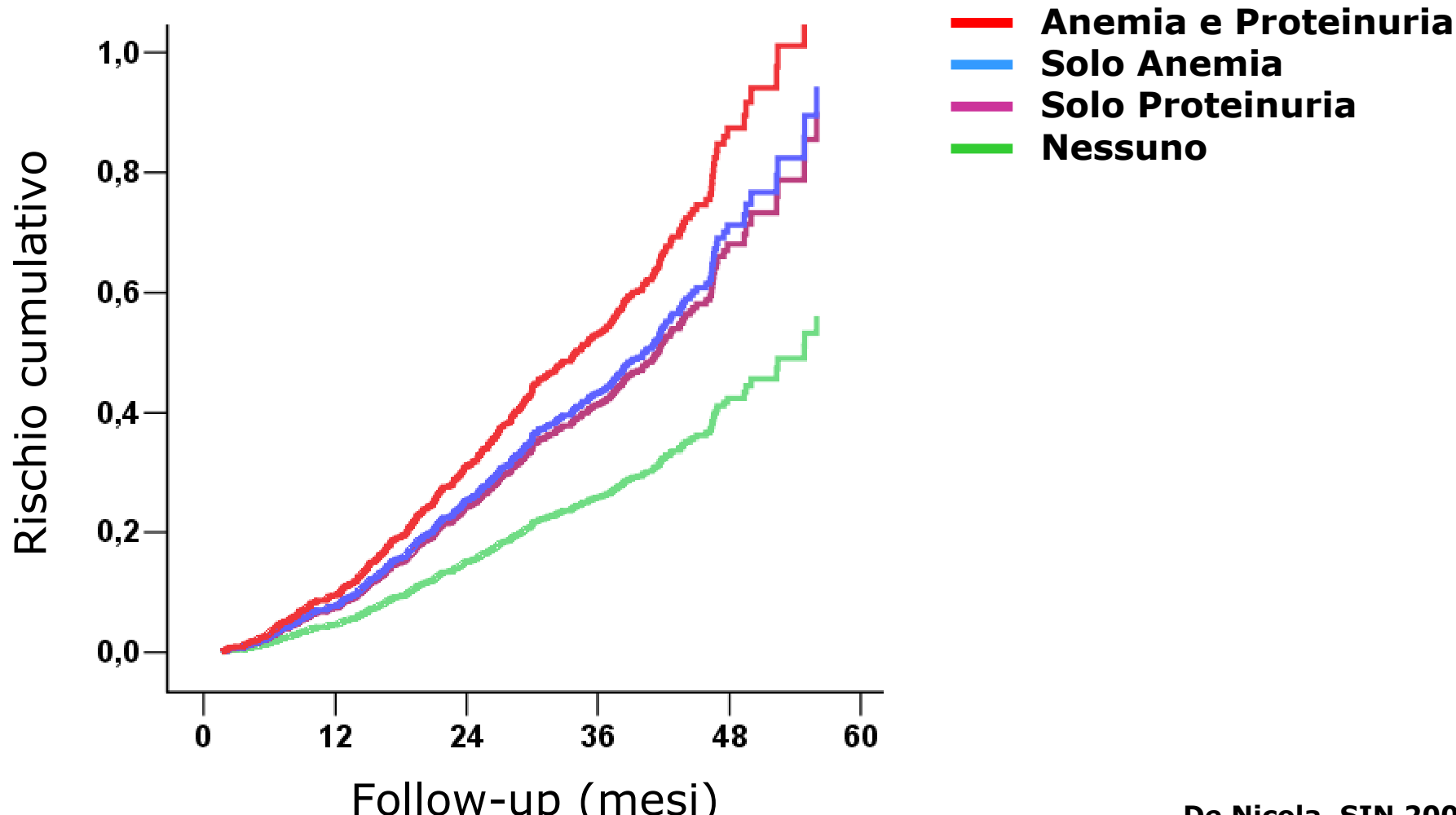
n: 1.240; Follow up: 38 mesi (2-64)

Dialisi: n=308 , Morte: n=153 (75% da causa CV)

Tassi di incidenza: Dialisi 9.0 vs Morte 4.5/100 pz/anno



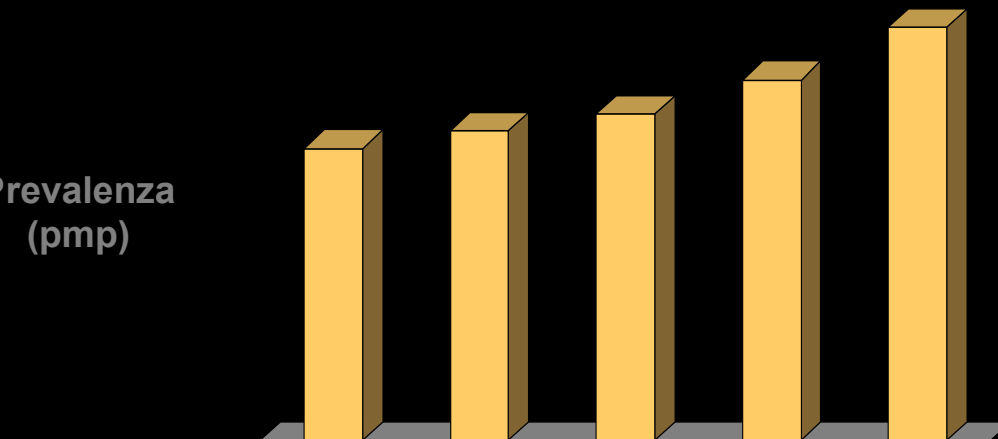
Tempo alla Morte Renale in pazienti CKD stratificati per proteinuria e anemia (studio TABLET)



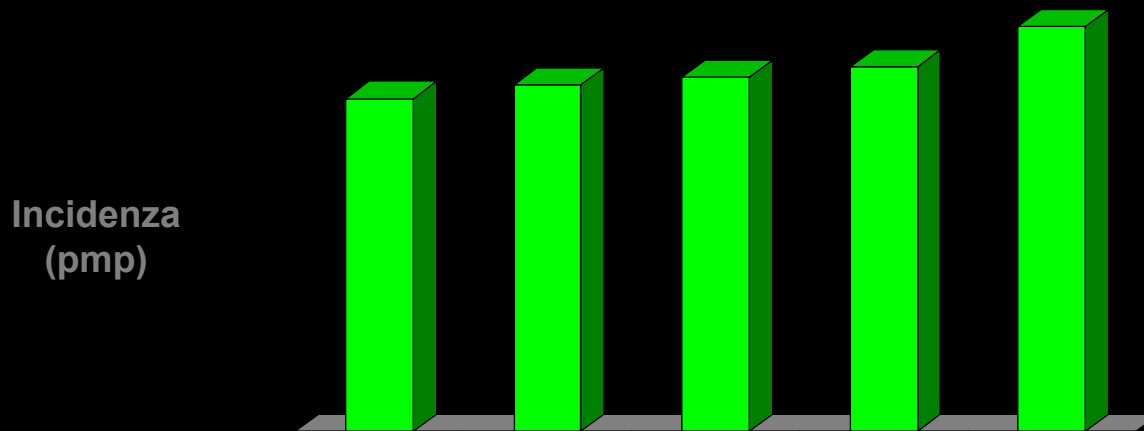


ANEMIA in Dialisi ?

Dimensioni del problema terapia sostitutiva in Italia

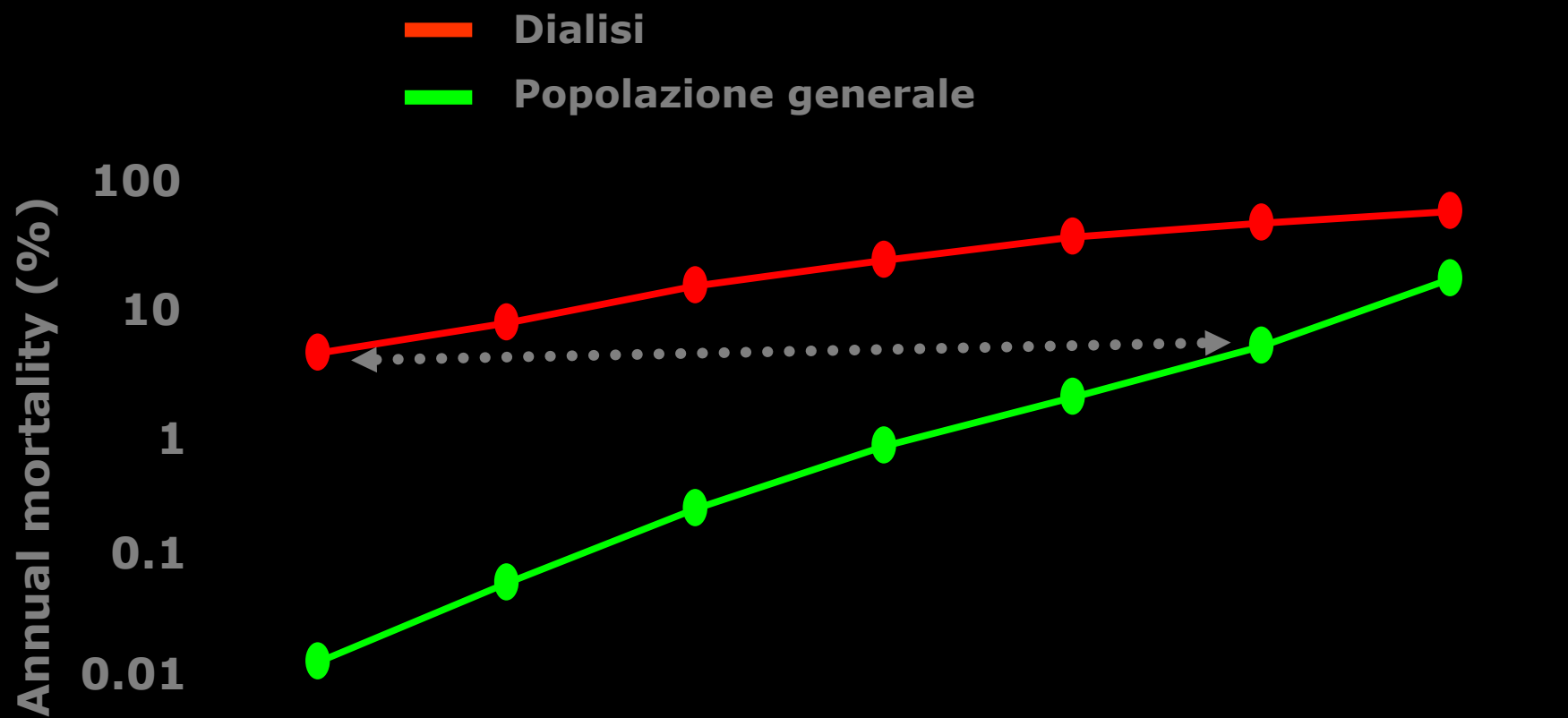


**Prevalenti al 2004:
43.986 dializzati
15.198 trapiantati**

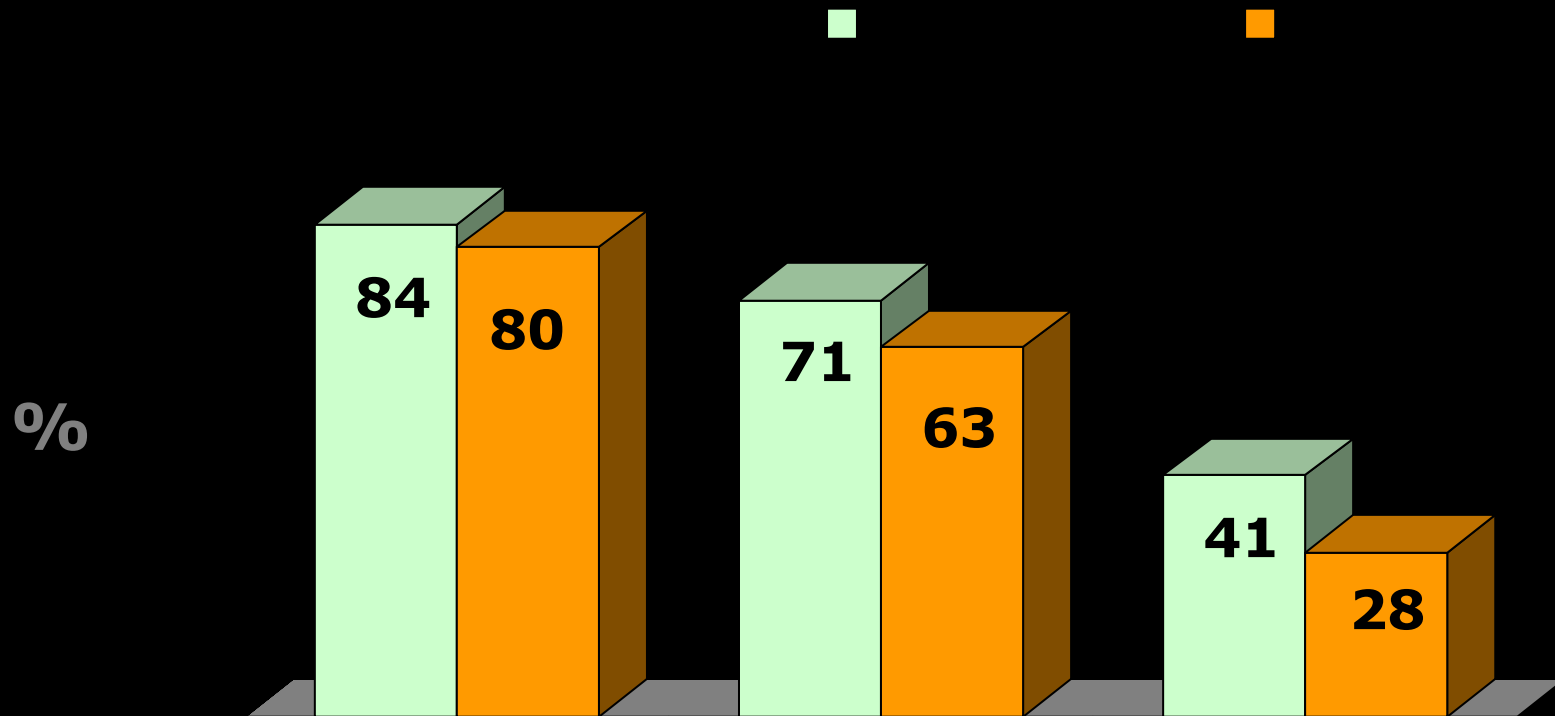


**Incidenti nel 2004:
9.312**

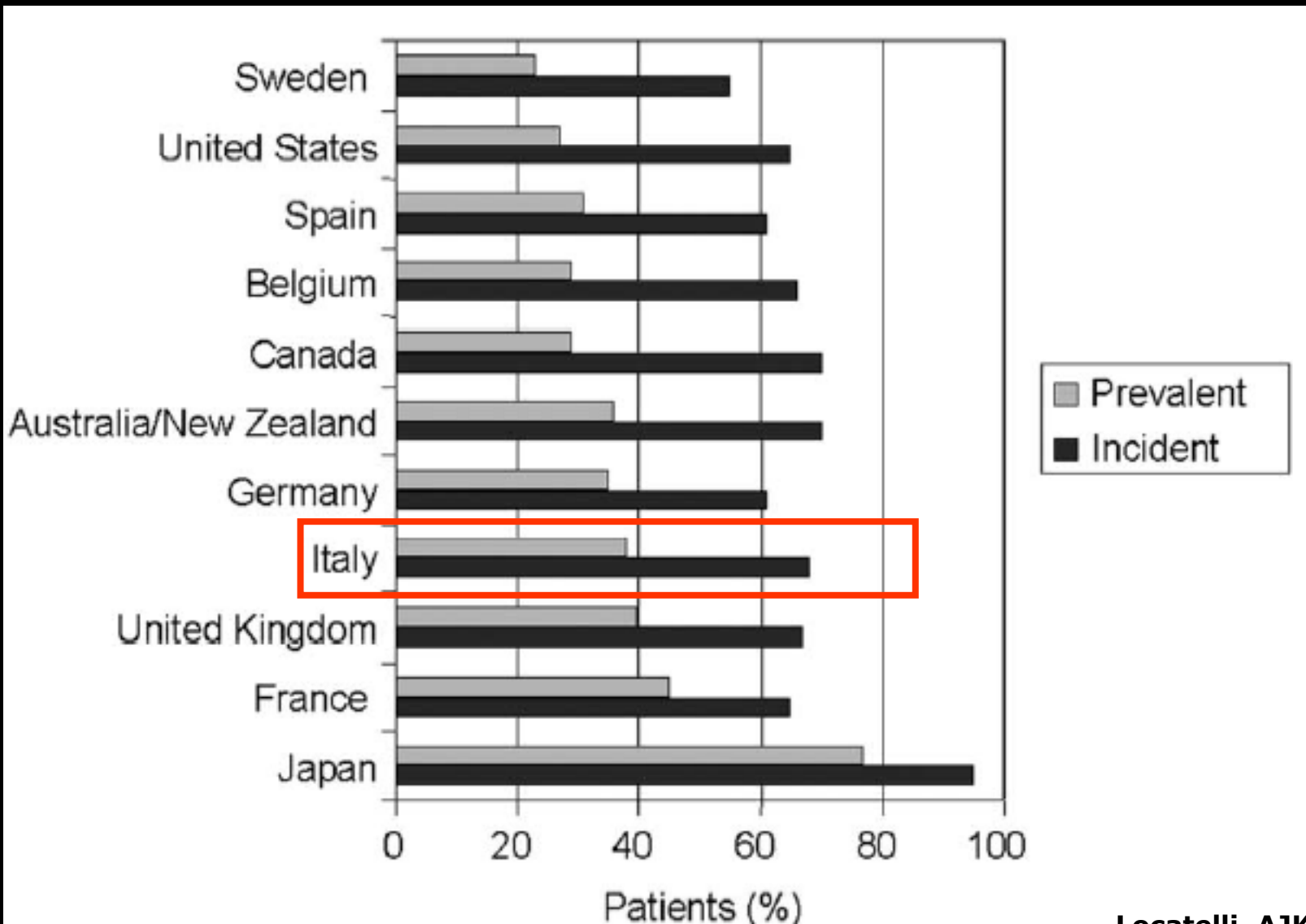
Mortalità in dialisi vs popolazione generale



Sopravvivenza in dialisi di pazienti non-diabetici e diabetici

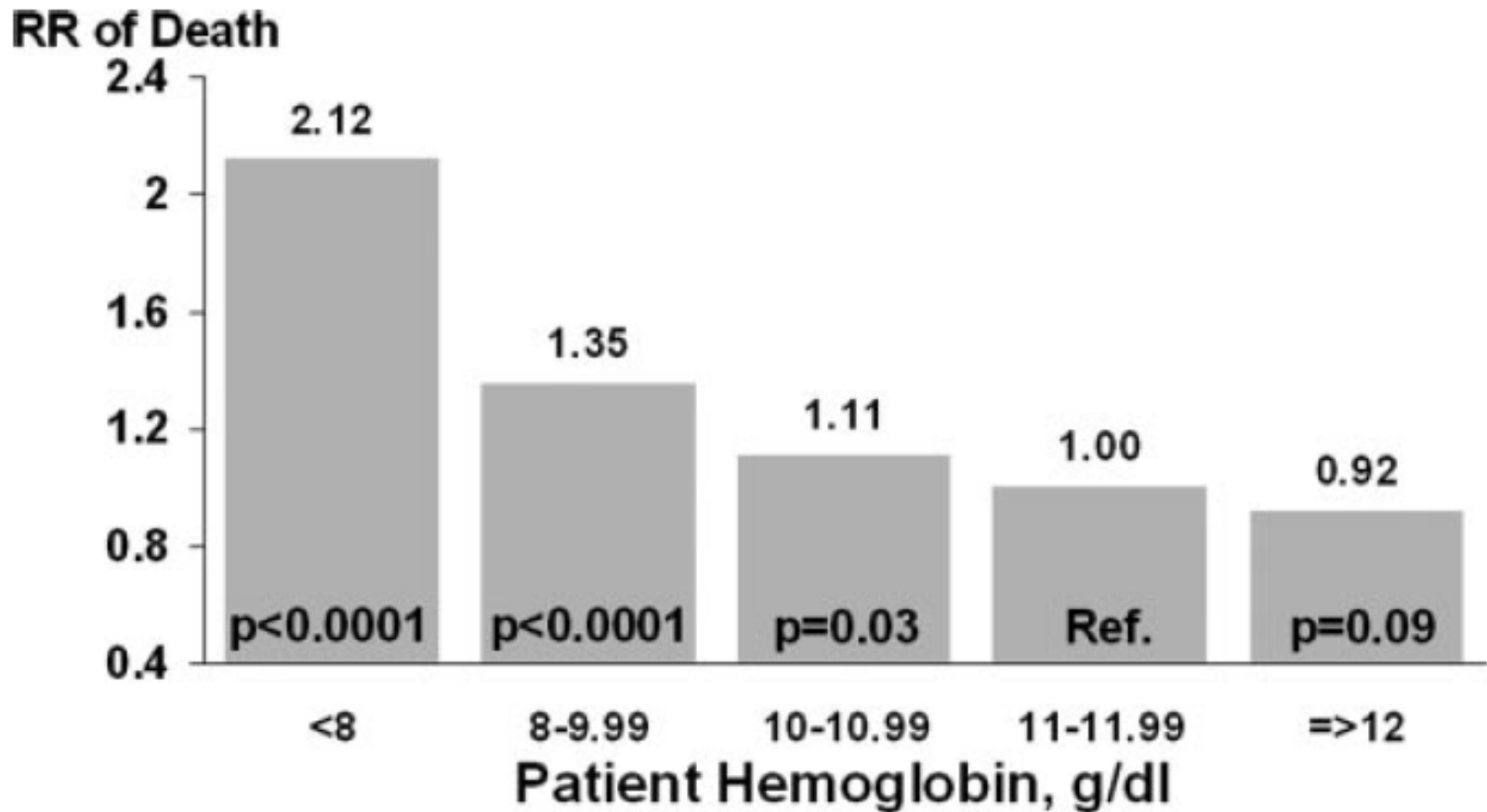


OPPS study: percentage of anemic HD pts (N=11,041 – period 2002 to 2003)



Association of Hb with mortality risk (DOPPS study)

N=14.110 (Europe, US, Japan)



adjusted for age, gender, black race, body weight, 15 comorbid classes, phosphate, calcium, albumin, erythropoietin units per week, country, hospitalization during time interval, and facility clustering.

L'Anemia si associa a mortalità e morbidità

Pazienti in dialisi

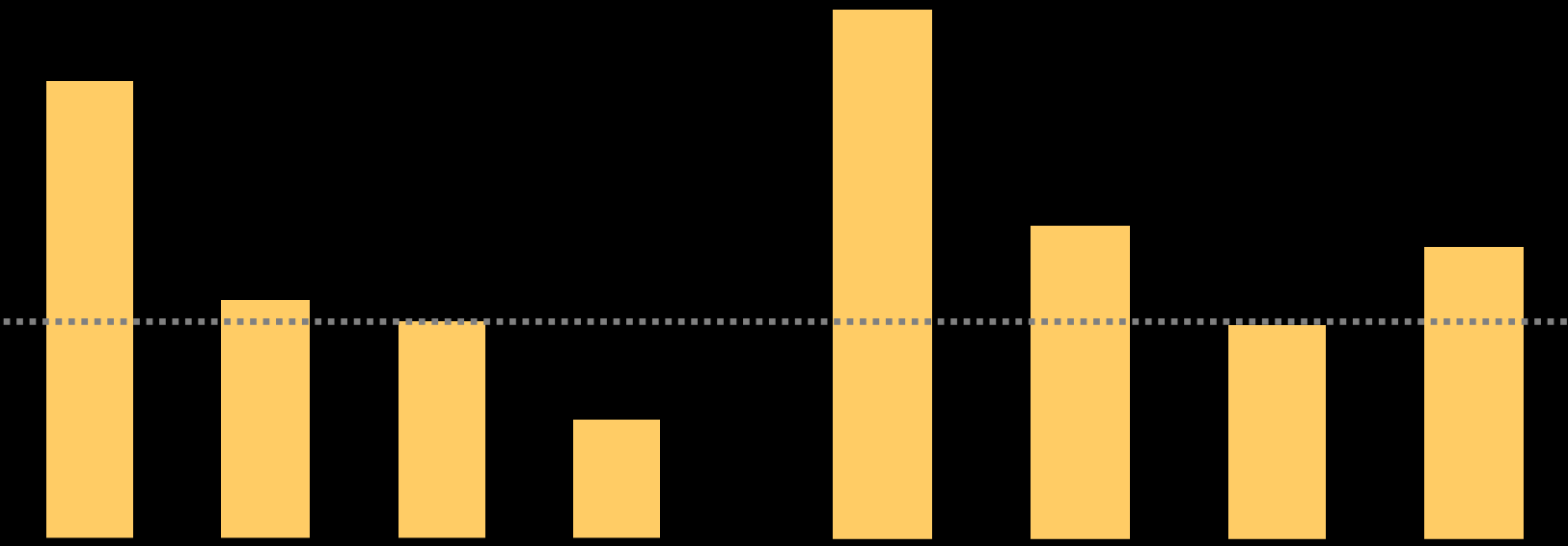
RR

Rischio relativo di decesso

Rischio relativo di ospedalizzazione

RR totale=0.95 per
1 g/dL in più di Hb ($P=0.03$)

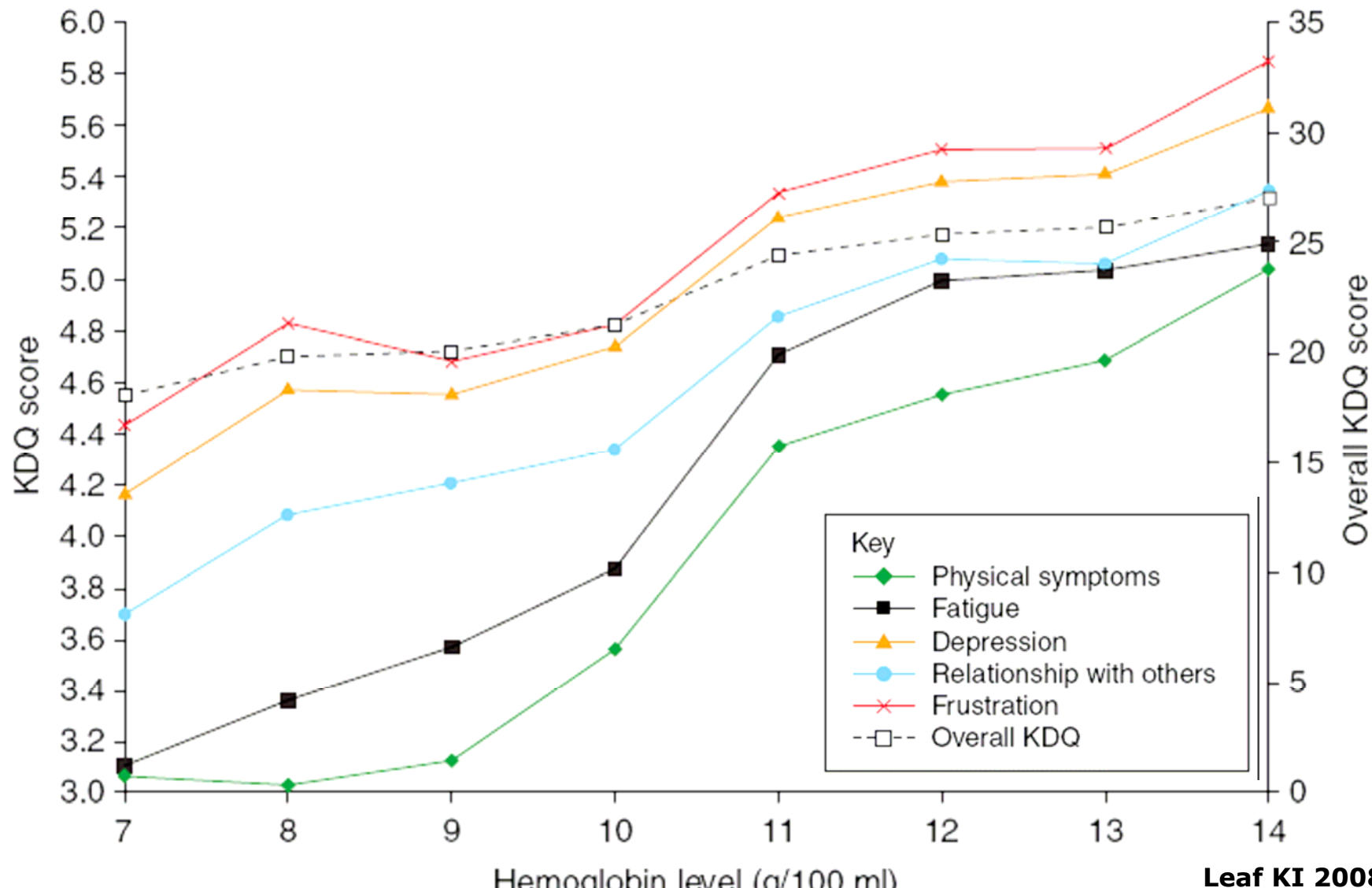
RR totale=0.96 per
1 g/dL in più di Hb ($P=0.02$)



Hb (g/dL) all'ingresso nello studio

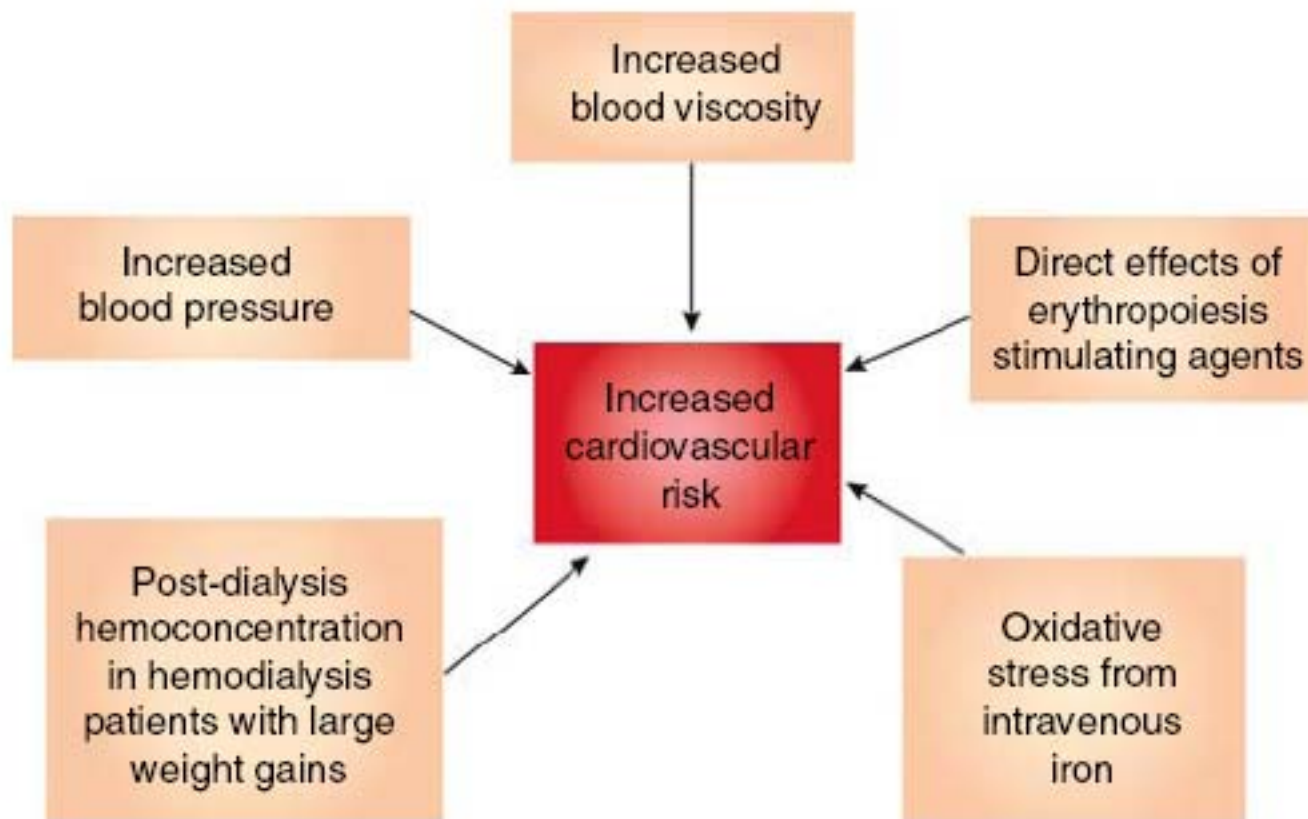
RR=rischio relativo

Valori di Hb >11g/dL si associano a miglioramento della qualità di vita



The new FDA label for erythropoietin treatment: How does it affect hemoglobin target?

S Fishbane¹ and AR Nissenson²





National Kidney
Foundation

KDOQI

KIDNEY DISEASE
OUTCOMES
QUALITY INITIATIVE

KDOQI CLINICAL PRACTICE GUIDELINE AND CLINICAL PRACTICE RECOMMENDATIONS FOR ANEMIA IN CHRONIC KIDNEY DISEASE:

2007 UPDATE OF HEMOGLOBIN TARGET

In dialysis and nondialysis patients with CKD receiving ESA therapy, the Hb target should not be greater than 13.0 g/dL. (Clinical Practice GUIDELINE - MODERATELY STRONG EVIDENCE)



**EPO in IRC...
...essenziale !!**



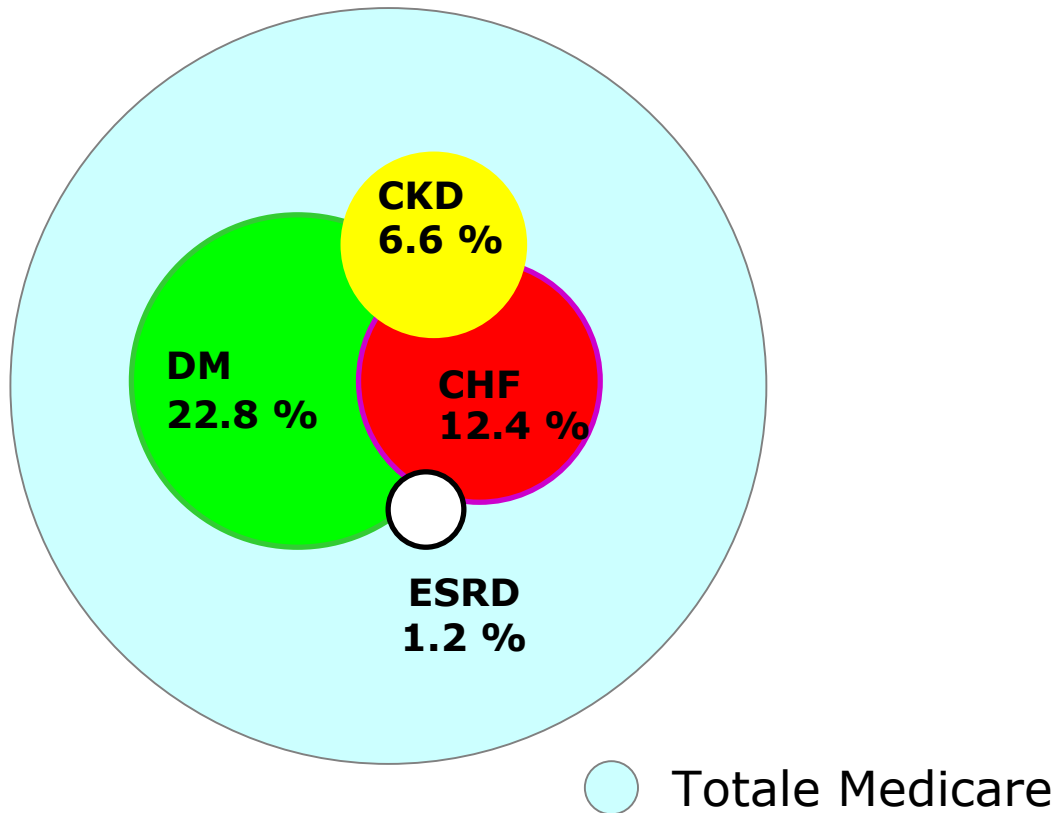
...Budget ?

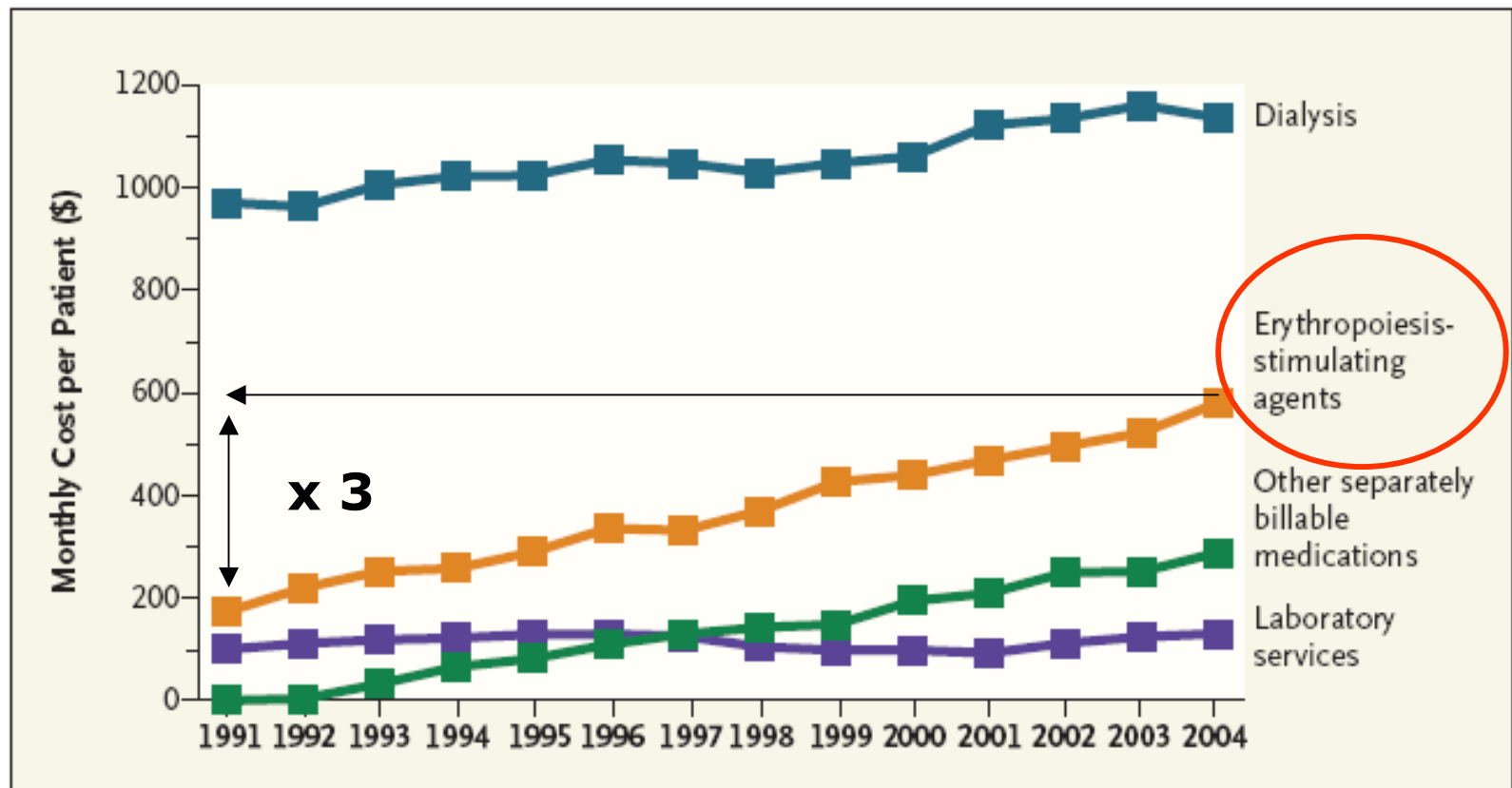


Prevalenza e costi delle malattie croniche in USA (Medicare)

Popolazione generale

(n = 31.121.449)

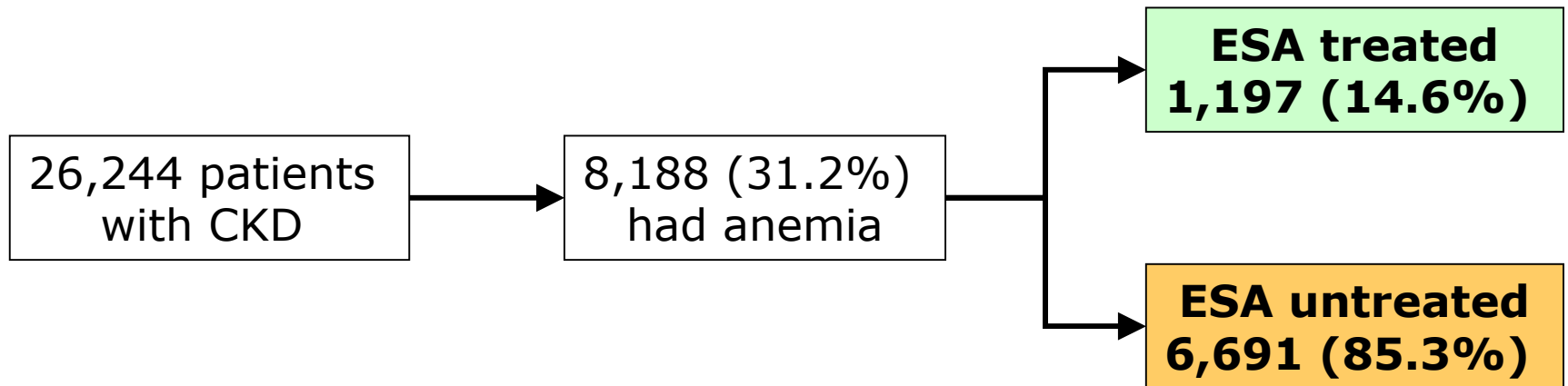




Monthly Spending per Patient for Clinical Dialysis Services in the Medicare Program.

Erythropoiesis-stimulating agents are epoetin alfa and darbepoetin alfa. Other separately billable medications include injectable iron and vitamin D, which account for most of the spending in this category. Data are from the U.S. Renal Data System.³

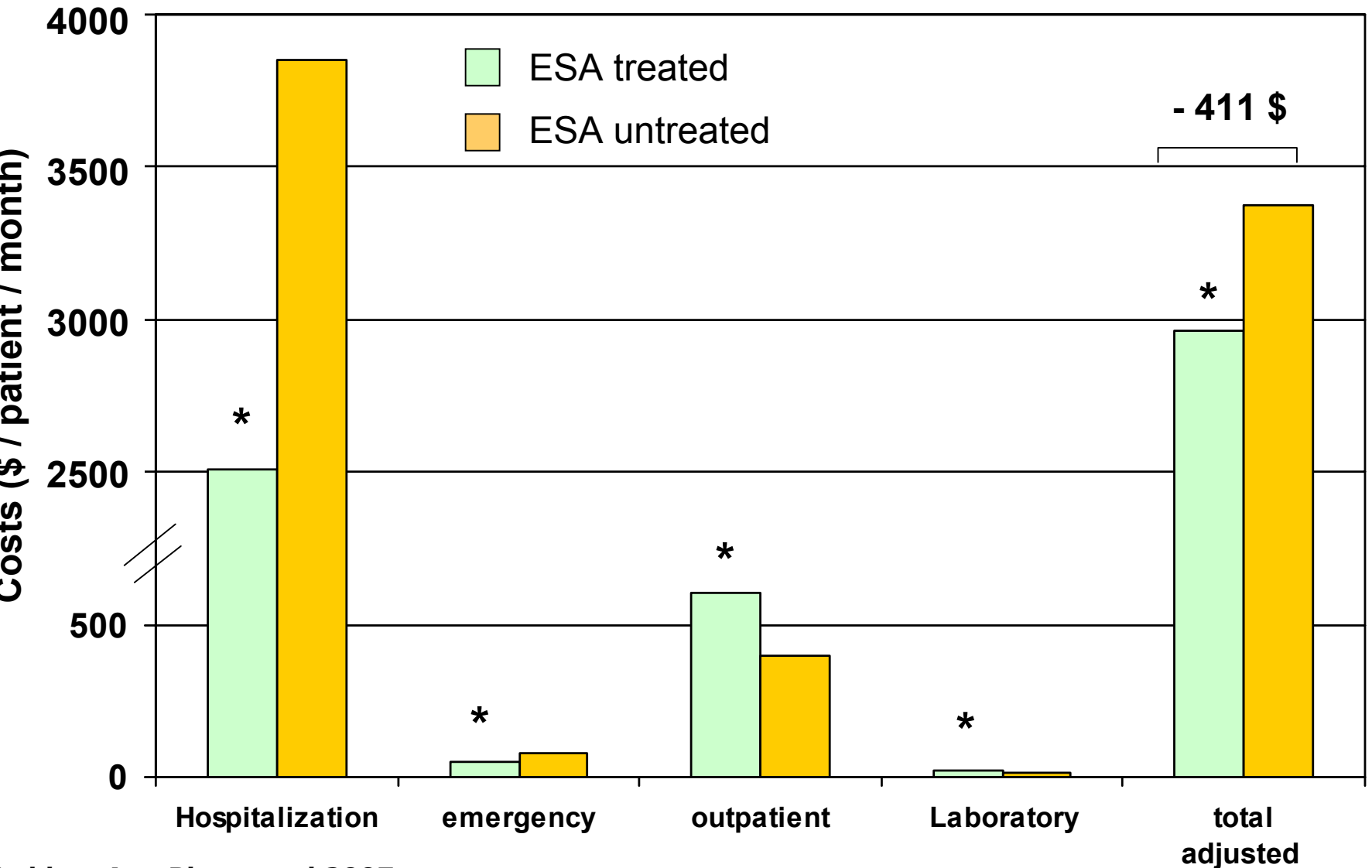
Costs of EPO-treated vs untreated patients



Considered costs

1. Hospitalization
2. Emergency department
3. Outpatient
4. laboratory

Costs of EPO-treated vs untreated patients



L'anemia nel paziente nefropatico...

- ✓ **rappresenta una complicanza frequente che compare precocemente in corso di IRC e si aggrava con il peggiorare del danno renale**
- ✓ **è associata a ridotta qualità di vita e aumentato rischio cardiovascolare e di progressione verso la dialisi**
- ✓ **si associa ad un maggiore dispendio di risorse economiche se non viene corretta**

Grazie per l'attenzione