

# From Guideline to individual prescription: the case of erythropoiesis-stimulating agents (ESA)



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## INTRODUCTION

Since the introduction of ESA into clinical practice, the percentage of CKD or ESRD patients with a haemoglobin (Hb) level lower than 10 g/dl has considerably decreased. But while Hb targets increased progressively, often into the range of normal values, the risks of harm in individual patients was pointed out since 2007.

Since 2007, many guidelines have been published, lowering the level at which ESA should be introduced or withdrawn [1,2,3].

The aim of this study is to analyse the trend in high level of Hb and the impact of guidelines during the last 5 years.

## METHODS

Using data from the French Rein registry in 18 regions (7 000 to 7 600 new patients each year), the trends of Hb level and ESA treatment for new patients and patients on dialysis at December 31 was analysed.

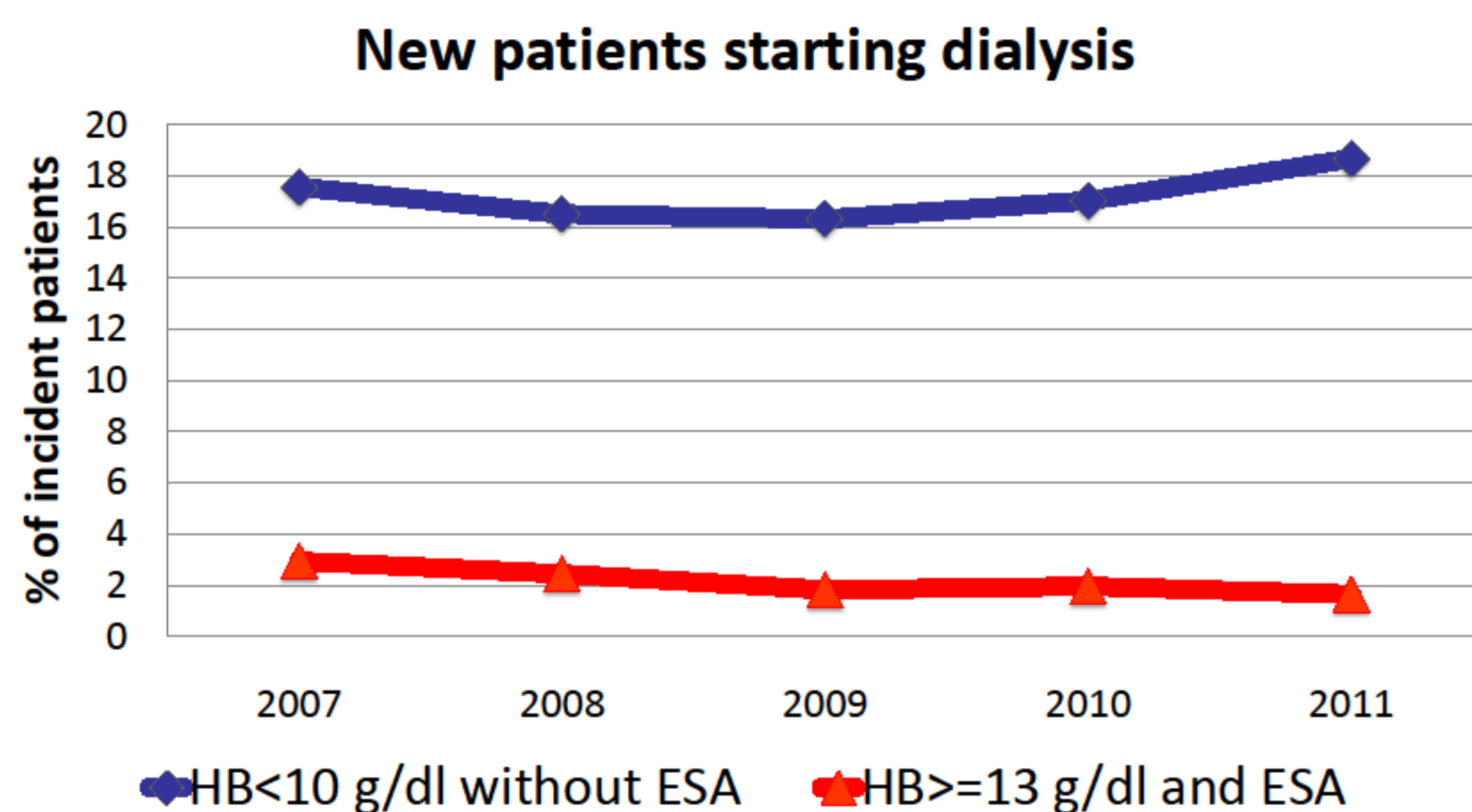
Over-treatment is defined as an Hb level over 13 g/dl with ESA.

Under-treatment is defined as an Hb level lower than 10 g/dl without ESA.

The association between the risk of under or over treatment and various clinical factors were analysed by logistic regression models.

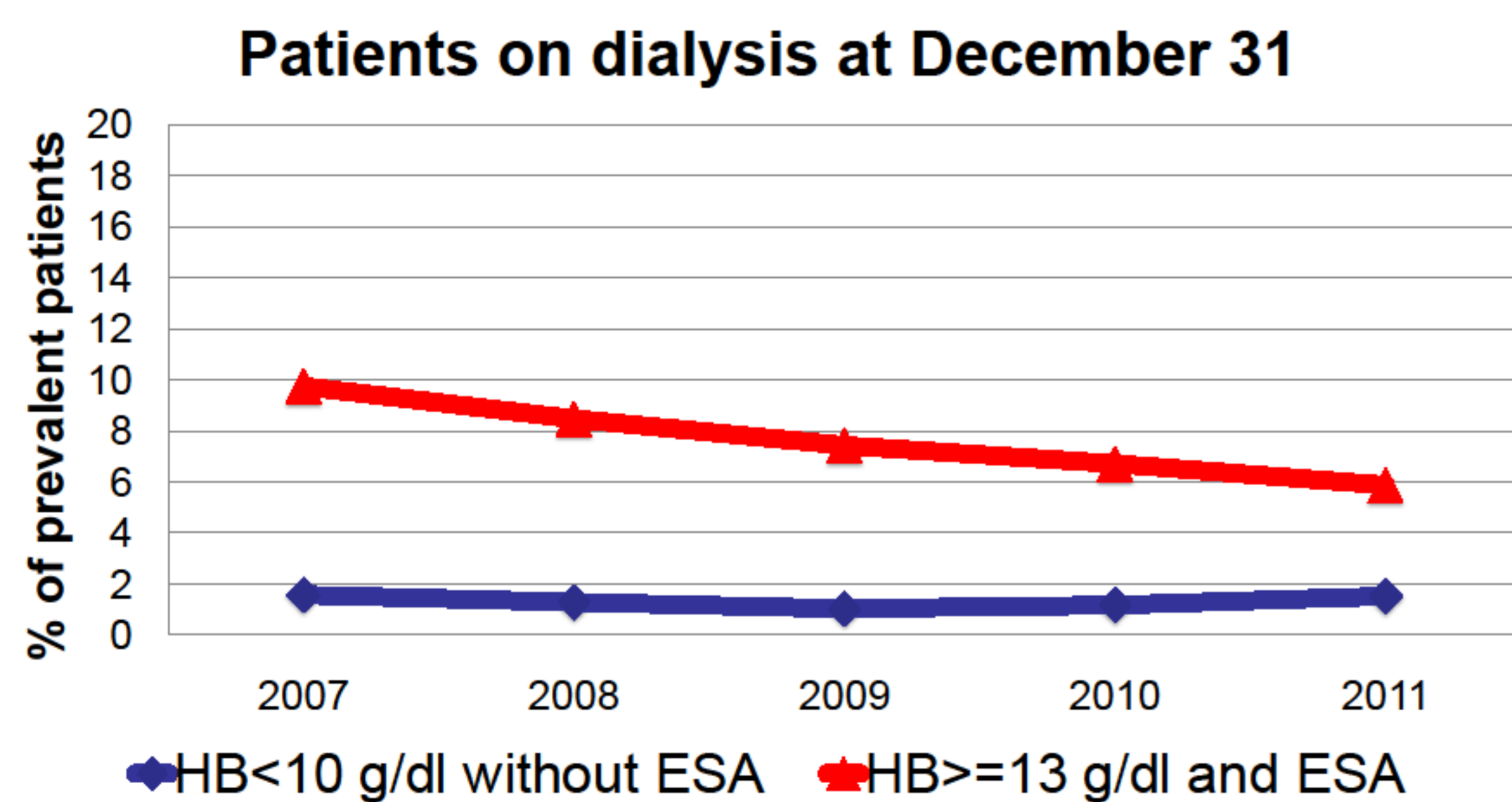
## RESULTS

Since 2007, the median level of Hb is decreasing in incident patients on dialysis : from 10.4 g/dl to 10.1 g/dl. Trends of under-treatment and over-treatment patients are shown in the figure below.



In prevalent patients on dialysis at December 31, the median level of Hb is decreasing from 11.6 g/dl to 11.3 between 2007 to 2011.

Trends of under-treatment and over-treatment patients are shown in the figure below.



## DISCUSSION

In new patients, the percentage of patients with a Hb level under 10 g/dl without ESA is still high (over 16%) while the percentage of patients “over-treated” is low (at 2%).

Factors associated with “under-treatment” at dialysis start are the presence of cancer (OR 1,3, 95%CI 1,2-1,4), cirrhosis (OR 1,3, 95%CI 1,1-1,6), start in emergency (OR 3,3, 95%CI 3,1-3,5), younger age and region of treatment. The presence of cardiovascular comorbidity is associated with a lower risk (OR 0,94, 95%CI 0,91-0,97).

Awareness of under-treatment of anaemia in CKD or ESRD patients has led to a “quasi-vanishing” of patients on dialysis with a Hb level under 10 g/dl without treatment (< 2%). While patients on dialysis with a Hb level over 13 g/dl with ESA was as high as 10% in 2007, the recent trends show a constant decrease.

Factors associated with “over-treatment” while being on dialysis are younger age and region of treatment. The presence of cirrhosis is associated with a lower risk (OR 0,85, 95%CI 0,72-0,99) as well as female gender (OR 0,92, 95%CI 0,88-0,96).

In both population, the percentage of patients with an Hb level lower than 10 g/dl without ESA seems to re-increase since 2010. This tendency has to be confirmed in the future.

## Conclusion

New guidelines in favour of better adaptation of ESA dose lead to decreased the number “over-treated” patients but we should now pay attention to under-treated patients.

## References

- 1- NKF-KDOQI 2007
- 2 - ERBP 2008
- 3 -KDIGO 2012

