

**DIALYSIS. ANAEMIA****P1372 PRE-DIALYSIS HAEMOGLOBIN TARGET ATTAINMENT AND POST-DIALYSIS OUTCOMES IN PERSONS WITH RENAL ANAEMIA: A NATIONWIDE STUDY.**

Yang Xu<sup>1</sup>, Marie Evans<sup>2</sup>, Franz Peter Barany<sup>2</sup>, Glen James<sup>3</sup>, Katarina Hedman<sup>4</sup>, Arvid Sjolander<sup>1</sup>, Juan Jesus Carrero<sup>5</sup>

<sup>1</sup>Karolinska Institutet, Medical Epidemiology and Biostatistics, Stockholm, Sweden,

<sup>2</sup>Karolinska Institutet, Renal Medicine, Stockholm, Sweden, <sup>3</sup>AstraZeneca, United Kingdom and <sup>4</sup>AstraZeneca, Gothenburgh, Sweden

**Background and Aims:**

Attaining the narrow hemoglobin range (10-12 g/dL) recommended by current ERBP renal anemia guidelines may be difficult, and whether this leads to better outcomes is not well known. This study aimed to identify patient and clinical factors associated with difficulties in maintaining hemoglobin target ranges in routine non-dialysis nephrologist care. We also evaluated whether adherence to ERBP hemoglobin recommendations during pre-dialysis care predicted early post-dialysis outcomes.

**Method:**

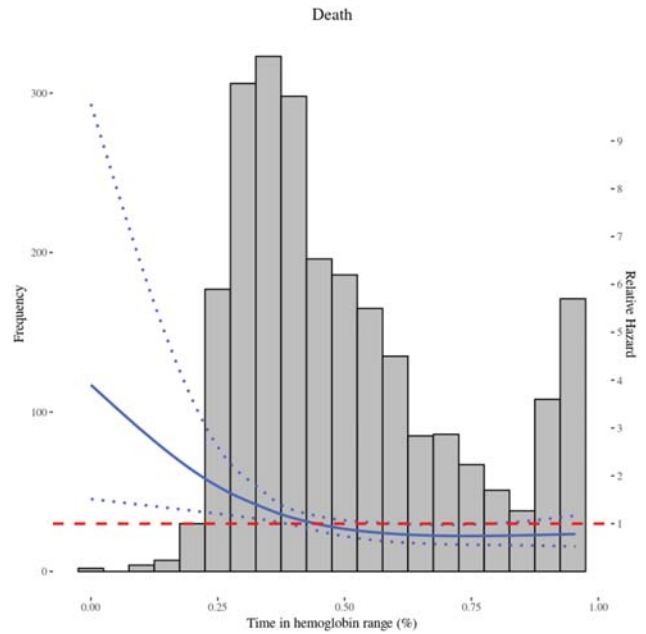
Observational study from the Swedish Renal Registry including all patients with non-dialysis dependent CKD stages 3b-5 developing renal anemia or initiating treatment (iron, ESA or both) between 2012-2016. Through multinomial logistic regression with clustered variance, we identified clinical conditions associated to serum hemoglobin values outside the ERBP recommended range (<10 and >12 g/dL) throughout all recorded patient visits until death, dialysis or end of follow-up. For those who initiated dialysis, we calculated the proportion of patient-time in which hemoglobin was maintained within range (time in range [TIR]). We then explored associations between TIR and subsequent one-year risk of death or MACE (composite of death caused by CVD and non-fatal MI, stroke, heart failure) with Cox proportional hazards regression.

**Results:**

A total 8106 patients with CKD 3b-5 developed incident anemia in Sweden during 2012-2016, contributing with 37422 nephrology visits during median 2 years of follow up. In multinomial logistic regression, being a man and having received iron or higher ESA doses was associated with hemoglobin values outside target range. Patients with CKD 3b and 4, ongoing transplant, history of CVD, or with higher serum calcium and albumin levels had higher odds of maintaining hemoglobin values above range. Conversely, recent bleeding or transfusions, nephrosclerosis, inflammation (CRP > 5 mg/dl), and higher phosphate levels increased the odds of having hemoglobin values below range. A total 2435 patients initiated maintenance dialysis during the study period. Of those, 327 died and 701 developed MACE during the subsequent year. Their median TIR during their pre-dialysis period was 44% (IQR: 34-50). On a continuous scale (FIGURE), we observed worse outcomes for patients with poor guideline recommendation adherence (low percentage TIR), although the association was judged weak. On a categorical scale, patients that spent more than 40% of their pre-dialysis TIR had lower hazards of death (0.57, 95% CI 0.41-0.80) and MACE (0.67, 95% CI 0.54-0.84) compared to those with <44% TIR.

**Conclusion:**

This nationwide study reports that greater adherence to ERBP anemia guidelines during pre-dialysis care, using existing conventional therapeutic approaches, is associated with better post-dialysis outcomes. Whether active interaction by healthcare practitioners affected the observed relationship needs to be further explored.



**Figure.** Multivariable-adjusted associations between time in haemoglobin range during predialysis care and the risk of death or MACE after initiation of dialysis. Blue straight line depicts Hazard ratios, and dashed blue lines 95% confidence intervals. The red line shows null hazards.