Reviewer’s report

Title: Predicting erythropoietin resistance in hemodialysis patients with type 2 diabetes

Version: 1 Date: 24 July 2012

Reviewer: Adam Gaweda

Reviewer’s report:

- Major Compulsory Revisions

1. The authors define ESA Resistance Index as a ratio of weekly (weight-adjusted) ESA dose to Hb level. This (widely used) definition is only valid when both ESA dose and Hb level are in a steady state. However, we do not know if that condition was satisfied in the study cohort. Based on the information available in the literature, this condition is very rarely reached in HD patients. In that case, a more appropriate definition of ERI would be one to account for extended, time-lagged effect of ESA on Hb, for example, a ratio of average ESA dose received over months 1-3 to the average Hb achieved over months 2-4 (at least three months should be taken into account).

2. ESA Resistance is a continuous (not discrete) diagnostic concept. ROC analysis, as performed by authors, is predominantly applicable to binary classification problems. I am not sure it is appropriate here. However, if the authors decide to report the results of the ROC analysis, they should provide the best achieved sensitivity and specificity and the associated diagnostic threshold.

- Minor Essential Revisions

1. The authors include hemoglobin among the clinical markers of ESA resistance. Hemoglobin is already functionally used in the dependent variable in the model. Using it as an independent covariate is questionable. It is therefore not a surprise that low hemoglobin is predictive of ESA resistance, this is known per definition.

2. With the number of covariates included, it would be valuable to know if any of them were correlated or, generally speaking, functionally related to each other.

- Discretionary Revisions

1. Either do not report the ROC analysis or report it as described in comment 2. in Major Revisions.

Level of interest: An article of importance in its field

Quality of written English: Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

Consulting agreement: Amgen
Chief Technology Officer: Pharos Medicine, LLC