

EP 16.89: Predictive performance of maternal characteristics, sFlt-1, PLGF and their ratio for severe adverse maternal outcome in women with new-onset hypertension

Edward Tyrell, MD^{1, 2} Katherine G.Y. Lau, MD^{1, 2, 3} Martyna Bednorz, MD^{1, 2, 3} Kypros H. Nicolaides, MD^{2,3} Nikos A. Kametas, MD^{1, 2, 3}

¹ Antenatal Hypertension Clinic, King's College Hospital, London, UK
² Kings College London, London, UK
³ Fetal Medicine Research Institute, King's College Hospital, London, UK

Introduction

Angiogenic factors (PLGF and sFlt-1) have been used to predict progression to pre-eclampsia (PE) in women presenting with ‘suspected pre-eclampsia’ with moderate success. Their effectiveness to predict adverse outcome and when used in women with confirmed hypertension is less clear.

Methods

Prospective study of 548 women with singleton pregnancies presenting after 20 weeks of gestation with new-onset hypertension, including PE and gestational hypertension (GH). At presentation, maternal demographic characteristics, medical history, blood pressure and maternal blood samples for PLGF and sFlt-1 were collected. Women were followed up until delivery and maternal adverse outcomes recorded.

Univariate and multivariate logistic regression and areas under the receiver operating characteristic curves (AUROC) were produced to assess predictive performance of the models.

Results

Severe adverse maternal outcomes were observed in 40 (7.3%) of the 548 women in the study. Of these women 65.4% (n=26) presented initially with PE and 35.7% (n=14) with GH. In prediction of composite adverse outcome, there was no statistically significant difference between the AUROC of maternal characteristics (0.74) from Log₁₀sFlt-1 (0.74), Log₁₀PLGF (0.71), or Log₁₀sFlt-1/PLGF ratio (0.76). The results were similar when data was analyzed for women presenting before 37 weeks gestation. For prediction of diagnosis of PE at presentation, all models performed poorly, with the best performance provided by a combination of maternal characteristics and Log₁₀sFlt-1 (0.70).

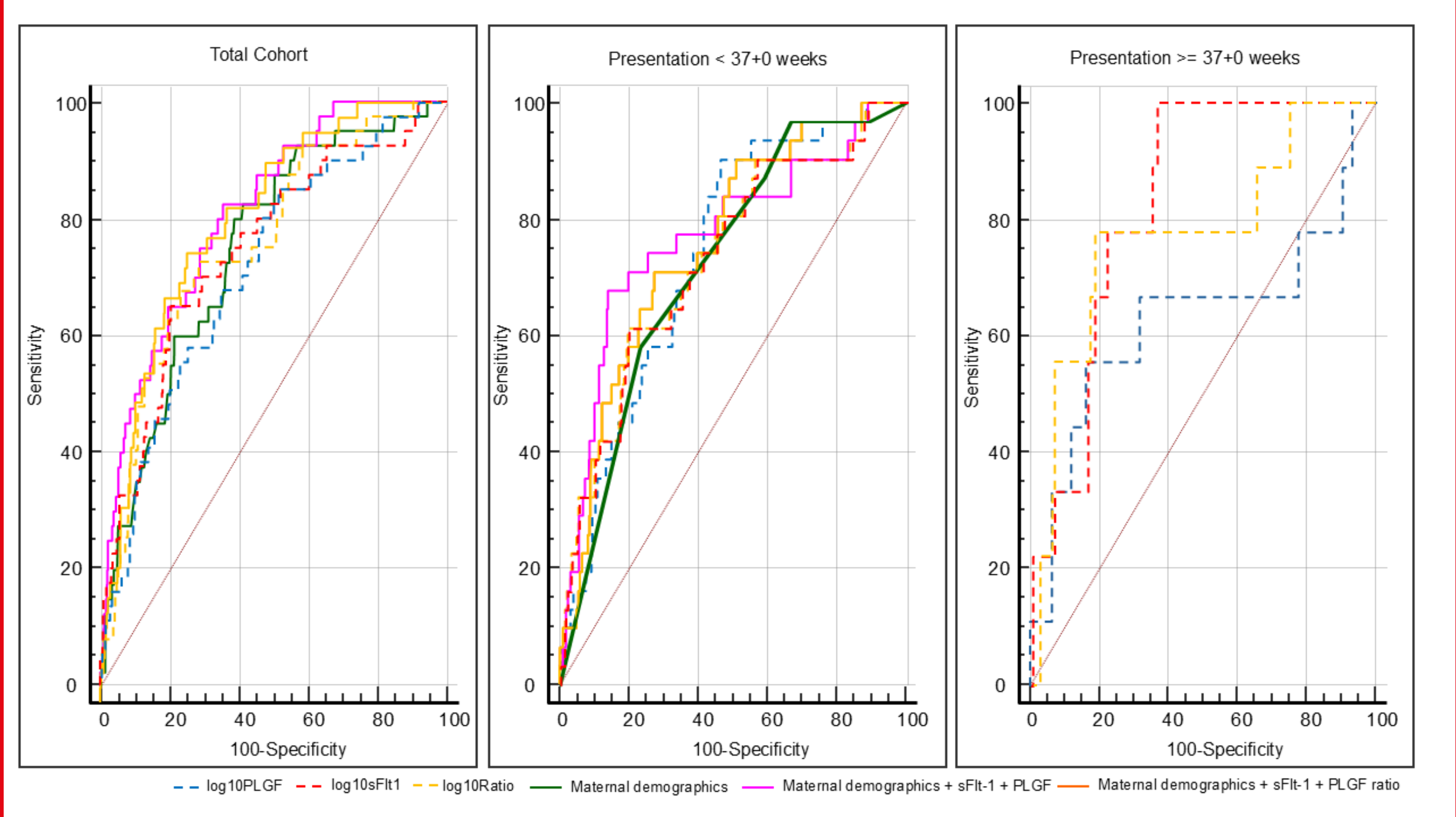


Figure 1 Receiver operator curve analysis for the prediction of composite maternal adverse outcome for models using maternal characteristics, sFlt-1, PLGF, sFlt-1/PLGF ratio, maternal characteristics + sFlt-1 + PLGF, and maternal characteristics + sFlt-1/PLGF ratio.

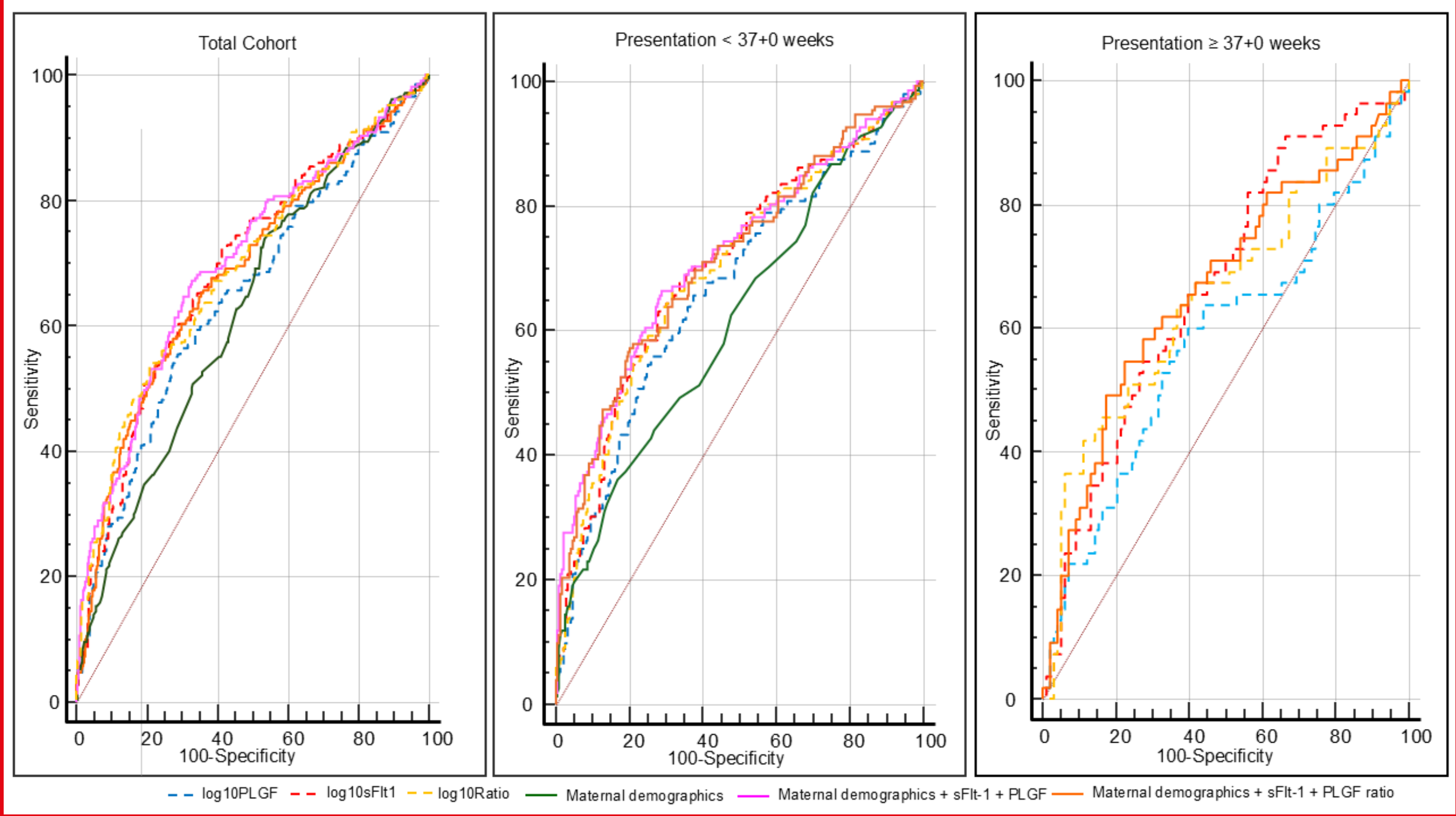


Figure 2: Receiver operator curve analysis for the prediction of PE at presentation for models using maternal characteristics, sFlt-1, PLGF, sFlt-1/PLGF ratio, maternal characteristics + sFlt-1 + PLGF, and maternal characteristics + sFlt-1/PLGF ratio.

Conclusion

- Maternal characteristics performed as well as models using sFlt-1 or PLGF alone to predict adverse outcome and PE
- sFlt-1 proved to be a stronger predictor of severe adverse maternal outcomes than PLGF.