

Placental Growth Factor (PLGF) as a Predictor of Preeclampsia, IUGR and Adverse Perinatal Outcomes



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1 Introduction

Placental Growth Factor (PLGF) is an angiogenic biomarker reflecting placental function.

Low maternal serum PLGF levels are strongly associated with placental dysfunction and adverse perinatal outcomes.

PLGF was implemented at TOH in October 2024. This QI initiative aimed to assess the performance of this tool to predict preeclampsia and/or intrauterine growth restriction (IUGR).



2 Methodology

We conducted a retrospective chart review for Quality performance audit

Included all patients who were tested with PLGF from October 2024 to March 2025

Maternal serum PLGF testing performed for singleton pregnancies with suspected preeclampsia or IUGR from 20 to 36 weeks GA

PLGF percentiles determined using gestational age-specific nomograms

Descriptive statistics used to describe perinatal outcomes according to PLGF levels.

Step 1
Identify eligible patients

Step 2
Maternal serum PLGF testing (20–36 weeks)

Step 3
Determine PLGF percentile (gestational age specific)

Step 4
Analyze perinatal outcomes

5 Discussion

Early Indicator

Low PLGF is linked to earlier delivery, increased NICU admission, and placental pathology.

Placental Dysfunction

Very low and low PLGF levels reflect impaired placental angiogenesis and reduced placental reserve.

Timing Matters

Shorter interval between PLGF testing and delivery in the low PLGF group highlights its value in short-term risk stratification.

Clinical Utility

PLGF measurement is a valuable tool to confidently diagnose or rule out preeclampsia, tailoring management according to risk stratification. Additionally, it can aid differentiation between IUGR vs SGA fetuses.



6 Conclusion



PLGF is a reliable measure of placental function; hence, very low/low PLGF is a strong predictor of unfavourable perinatal outcomes while normal/high PLGF may rule out placental disease (high NPV). PLGF identifies patients at risk of preeclampsia and/or IUGR fetuses who are at risk of poor perinatal outcomes.

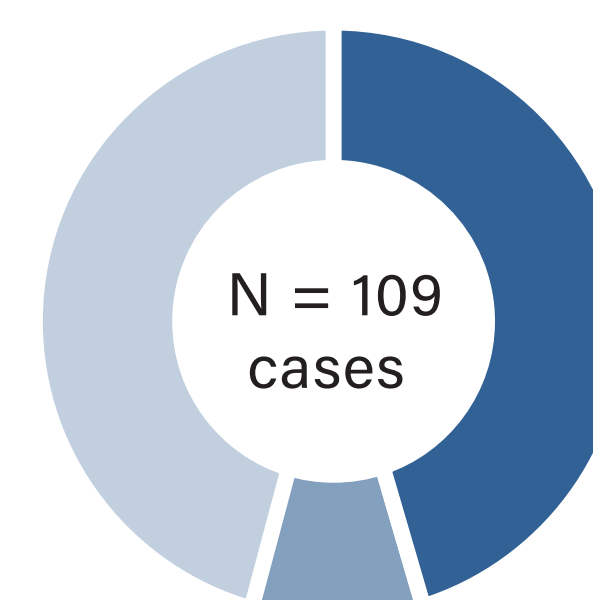


Low PLGF
Risk of adverse perinatal outcomes

High PLGF
Risk of adverse perinatal outcomes

3 Results

PLGF – Experience from our 109 cases (2024/2025)



- Very low (<2.5%): 51 cases (46.8%)
- Low (<5%): 9 cases (8.3%)
- Normal (>10%) and High (>50%): 49 cases (44.9%)

Indications for Testing

IUGR
39
(35.9%)

IUGR + HTN
23
(21.1%)

HTN
43
(39.6%)

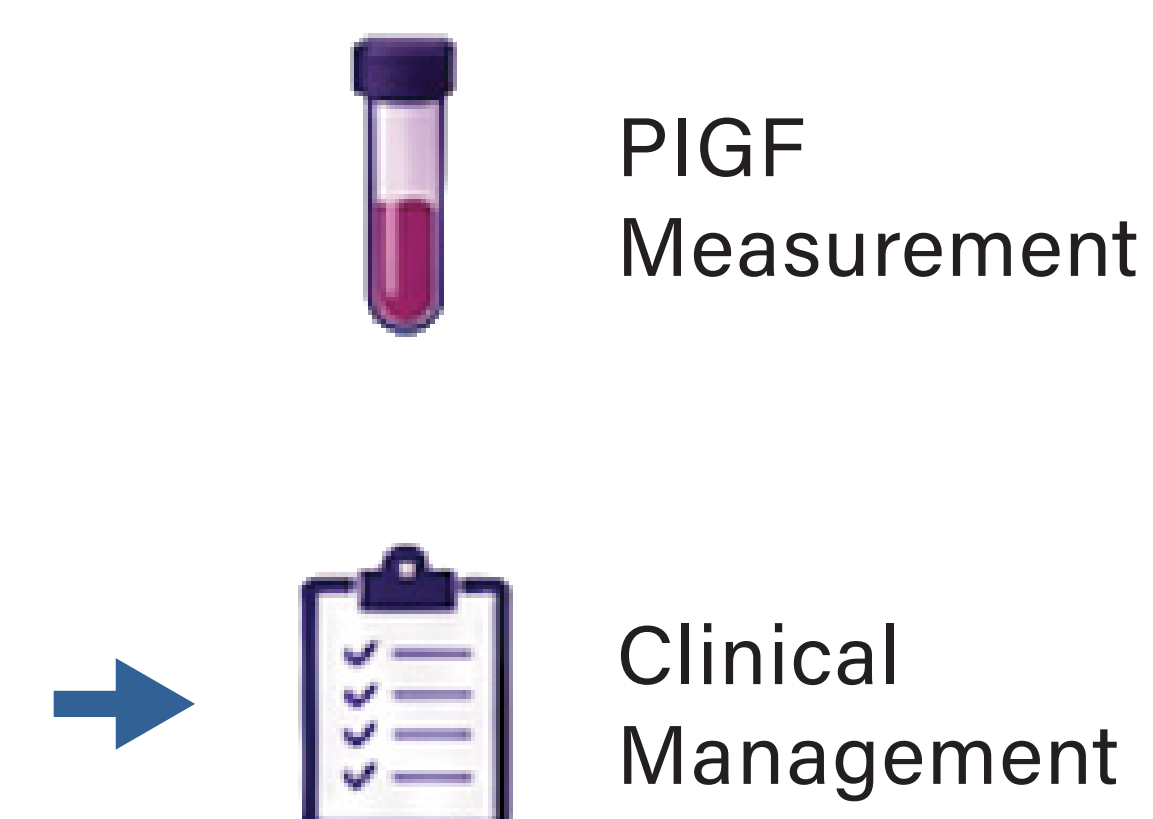
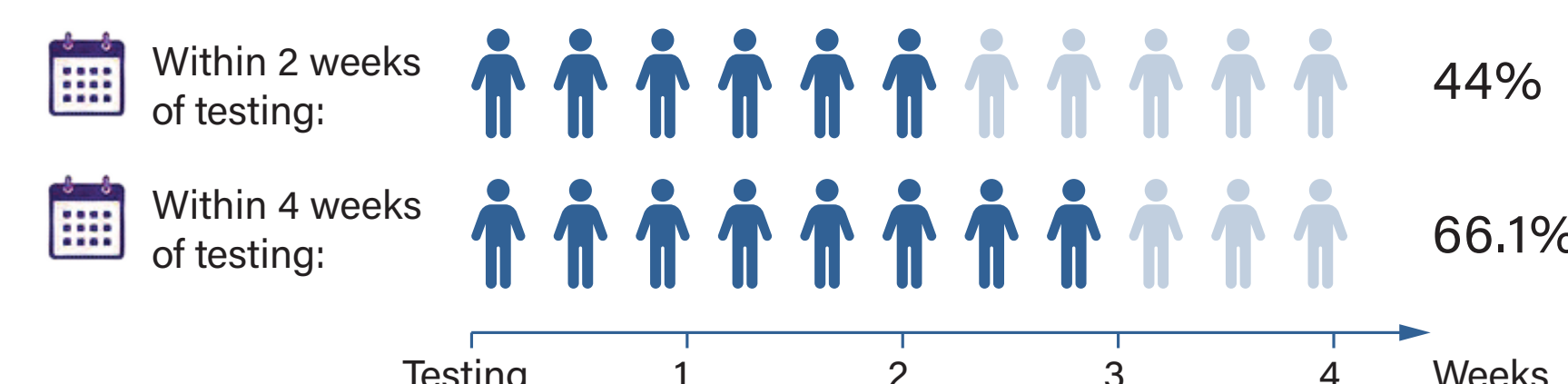
Unknown
3
(2.8%)

Perinatal Outcomes by PLGF Category

Variables	Very low + low PLGF (n=60)	Normal PLGF (n= 49)
Maternal age (mean, SD)	33.4 ± 6.4	32.6 ± 6.1
Mean GA delivery (mean, SD)	33.75 ± 3.6 weeks	37.35 ± 2.3 weeks
NICU admission, n (%)	39 (66.1%)	7 (14%)
Placental pathology: MVM, n(%)	20 (33%)	7 (14%)
Interval from PLGF testing and delivery (mean, SD)	3.7 ±3.4 weeks	7.2 ± 6.4 weeks
Interval from PLGF testing and delivery (median, IQR)	2.71 (1.28, 5.15) weeks	4.7 (3, 11.21) weeks

*MVM: maternal vascular malperfusion

Normal/High PLGF: correctly identified SGA with a false negative rate of 23.5%.
Very low/Low PLGF correctly identified IUGR in 99% of cases with a specificity of 81%



4 Performance Analysis

PLGF (centiles for GA) as a predictor of Preeclampsia

SS 86.5% SP 90% PPV 65.3% NPV 90%

PLGF (centiles for GA) as predictor of IUGR

SS 81% SP 84% PPV 69.4% NPV 84%

SS: Sensitivity SP: Specificity PPV: Positive Predictive Value
NPV: Negative Predictive Value

7 References

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