Clinical audit and evaluation of the placental growth factor (PIGF) service introduced to BSPS (including the Royal Surrey Biochemistry Laboratory) in June 2020 against NICE DG23 and the Trust pre-eclampsia pathway

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Introduction

Placental Growth Factor (PIGF) is a test that can predict the likelihood of a woman developing pre-eclampsia (PE) and delivering her baby within 14 days (Figure 2).

Current PE diagnosis is subjective, and many women are admitted to hospital For unnecessary monitoring. This is unwelcome, especially considering the Covid-19 pandemic where any hospital stay puts the patient at risk of contracting the virus.

Figure 1: The Quidel Triage MeterPro analyser used to measure PIGF in EDTA plasma.

In 2016, PIGF was recommended by NICE (DG23), yet this had not been implemented within BSPS, which covers five acute hospitals.

In June 2020 a PLGF service (Figure 2) was introduced to support the Royal Surrey Hospital (RSH) maternity department during the Covid-19 pandemic. An audit was conducted to assess this service against the NICE DG23 guidelines and the Trust suspected pre-eclampsia pathway.

Methodology

Over a period of 6 months all PIGF requests were extracted from the lab IT system (Winpath Enterprise). Patient notes were reviewed retrospectively to audit current practice against:

(1) NICE DG23

(2) Local Trust pre-eclampsia pathway

In addition, we report follow up data on all patients.

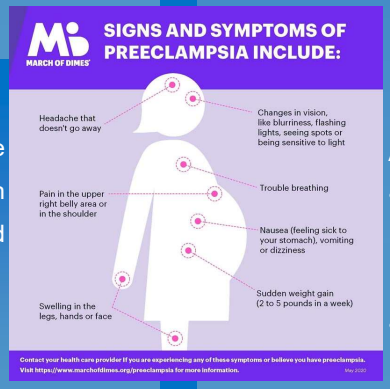

Figure 2: Signs and symptoms of preeclampsia. From: https://www.marchofdimes.org/complications/preeclampsia.aspx

Results

During the audit period there were 46 PIGF tests performed on 39 women at RSH.

PIGF results:

Normal: ≥100 pg/ml

Abnormal: 12-99.9 pg/ml

Severely abnormal: <12 pg/ml

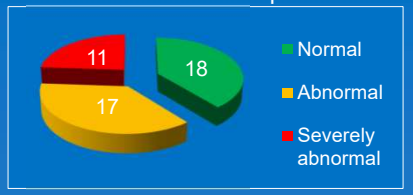

Figure 3: Results for PIGF tests at RSH during the audit period.

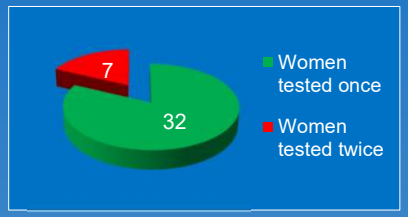

Figure 4: Number of PIGF tests taken on each patient at RSH.

Only one sample failed turnaround time (4 hours) due to lack of reagents. NICE DG23 and Duhig, K.E. *et al.* recommend testing women once only, between the gestations of 20 & 36+6 weeks.

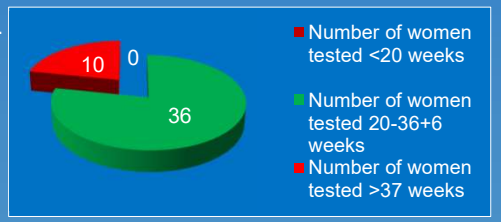

Figure 5: Gestation of pregnancy when PIGF was taken at RSH.

According to the Trust pre-eclampsia pathway:

- All PIGF tests were requested appropriately (blood pressure (BP) >140/90 mmHg/ >1+ proteinuria/ unresolved symptoms).
- Almost 100% of parallel testing was completed; full blood count, urinalysis, renal & liver profiles.

Results

- A microbiology urine specimen was taken in 39% cases.

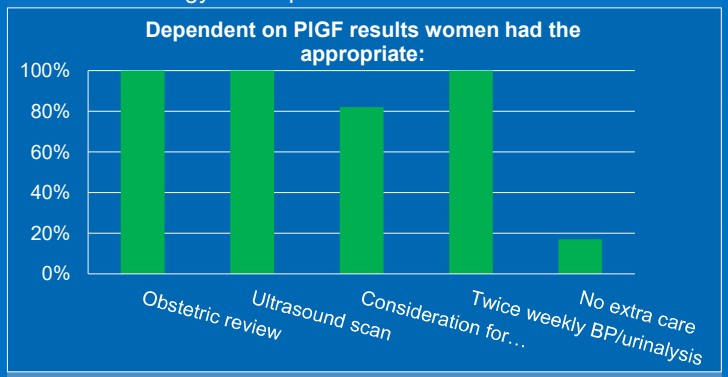

Figure 6: Follow up testing after PIGF test according to the Trust suspected pre-eclampsia pathway (Consideration for… admission).

17% women with a normal PIGF result were discharged back to the lowest possible level of maternity care (Figure 5). Eight overnight admissions were avoided.

Conclusions

- PIGF testing is being used at RSH, and generally within the recommended limits (1,2).
- Clinic visits and possible Covid-19 exposure were reduced for those patients who had a normal PIGF result and moderately high BP as the maternity team were confident they did not need monitoring.
- Overnight bed stays were also avoided in several cases.
- Clinical management was changed in 37% of cases according to the new & superseded PE pathway.
- 73% of women with PIGF <12 pg/ml had an adverse pregnancy outcome suggesting PIGF is predicting these consequences.

References: 1. NICE. Overview | PIGF-based testing to help diagnose suspected pre-eclampsia (DG23), pp. 1–47. 2. Duhig, K.E. *et al.* The Lancet 2019; 393(10183): 1807–1818. 3. Ormesher, L. *et al.* Pregnancy Hypertension. 2018; 14: 234-9.