Audit on Parvovirus B19 testing in pregnant individuals
March 2016-April 2017

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Summary:
There remains a gap between recommendation and actual practice when it comes to repeat testing of parvovirus-susceptible antenatal patients. With current numbers we may be missing some patients who may possibly sero-convert and potentially develop Foetal complications.

Background:
- Primary parvovirus B19 (PV B19) infection usually takes place in childhood. It causes mild febrile illness and can be accompanied by non-viral rash, enanthema infection or "fifth disease" (1). The disease is highly infectious and infection is transmitted via respiratory secretions. PV B19 infection in pregnancy can have serious effects on foetuses if acquired during the first 20 weeks of pregnancy. Hydrops foetalis and foetal loss are complications that may arise from PV B19 infection (2) (3).
- Sero-prevalence is in about 50-60% for adults in the UK (4). In order to prevent foetal complications of PV B19 infection, pregnant women who came in contact with patients with non-viral rash are recommended to be screened for rubella and PV B19 immunity.
- PV B19 infection is usually more prevalent in spring and early summer and tends to occur in increased numbers every 3-4 years. In 2012 the south west region recorded the highest number of confirmed PV B19 cases compared to other regions in England (4).

Audit criteria/standards:
- Public Health England recommends the following standards:
  - All women exposed to non-viral rash MUST be tested for PV B19 IgM and IgG.
  - Women who have evidence of past PV B19 infection can be reassured and no further testing is required.
  - All women who are susceptible to PV B19 (both IgM and IgG negative) should have a note on the report that this woman is SUSCEPTIBLE and further sample is required once month after last contact of IF symptoms develop.
  - All women who tested positive for PV B19 IgM must have confirmatory testing and referred to Foetal Medicine unit if acute PV B19 infection cannot be excluded.
- It will not be possible for this audit to test all pregnant individuals presented to health care provider have been tested for PV B19 IgM and IgG, hence this criteria will be excluded.

Audit problem/Population:
- Testing for PV B19 infection in a pregnant individual is a common encounter. There are consequences based on the results and reporting methodology. Public Health England issued guidance for viral rash during pregnancy (investigation, diagnosis, management of viral illness or exposure to viral rash illnesses in pregnancy) (5).
- Pregnant individuals who have been tested for PV B19 between March 2016 - April 2017 in the Public Health England laboratory, Bristol. We reviewed all samples reports sent to PHE virology lab in Bristol that were from ante-natal screening and/or "pregnant" in clinical details and requested parvovirus B19 screening between March 2016 and April 2017.

Methods:
- Data collected from different sources, for months of March – September 2016 se collated from Ultra system, but as clinical comment section was not possible to be retrieved from Ultra system, reports reviewed by looking into ICE Sunquest system. Reports for months Oct 2016-April 2017 were all collected from Wraph system as we were able to retrieve the clinical comment section.

Audit results:

**Audit criterion 1**
- Of those who tested IgG positive (906 patients), 22 (2.43%) had repeat at some point after they were tested positive 97.57% did not have repeat samples.

**Audit criterion 2:**
- 60% (n=12) of IgM positive patients advised referral to foetal medicine unit on the serology results report. 75% (n=15) of patients had confirmatory test in form of PV B19 DNA PCR.

**Audit criterion 3:**
- 83.04% reports documented.
- Only 24.4% had repeat serology sample within the recommended period as per PHE guidance.
- Repeat testing confirmed seroconversion in 0.60%

Conclusions:
- 97.7% of patients with evidence of past infection have no repeat samples. Only 60% of patients with positive IgM were advised on the clinical virology report to be referred to FMU (Foetal medicine unit) with only 75% having confirmatory testing by PV B19 DNA PCR.
- Only 24.4% of susceptible women were followed up in accordance with the protocol. To improve follow-up we plan to send reminders to GPs who do not send follow-up samples from susceptible women. The impact of this will be assessed during re-audit.

References:
1. [Reference 1]
2. [Reference 2]
3. [Reference 3]
4. [Reference 4]
5. [Reference 5]