

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



Public Health  
England

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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-vesicular rash, erythema infectiosum 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 foetus 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 in is 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-vesicular 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-vesicular 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 IgG and IgM negative) should have a note on the report that this woman is SUSCEPTIBLE and further sample is required one month after last contact or if symptoms develops.
  - All women who tested positive for PV B19 IgM must have confirmatory testing and referral to Foetal Medicine unit if acute PV B19 infection cannot be excluded.
  - It will not be possible for this audit to test that all pregnant individuals presented to health care provider have been tested for PV B19 IgM and IgG; hence this criteria will be excluded.

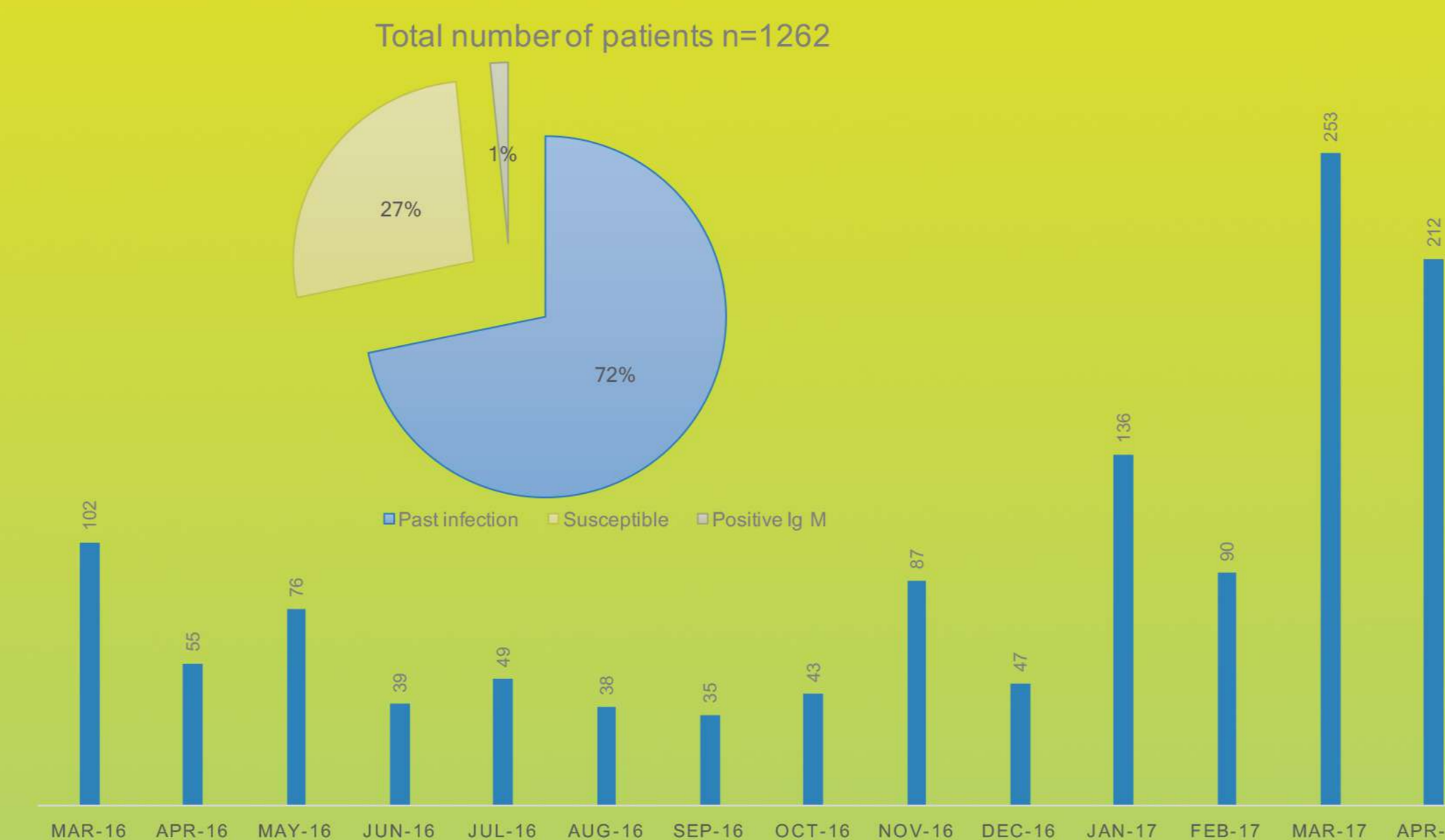
## Audit problem/Population:

- 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 serology requests collected from Ultra system, but as clinical comment section was not possible to be retrieved from Ultra system, reports verified by looking into ICE Sunquest system. Reports for months Oct 2016-April 2017 were all collected from Winpath system as we were able to retrieve the clinical comment section.

## Results



Month	Past infection (n)	Susceptible (n)	Positive Ig M (n)	Total
March 16	64.70% (66)	34.32% (35)	0.98% (1)	102
April 16	74.55% (41)	25.45% (14)	0% (0)	55
May 16	72.37% (55)	25% (19)	2.63% (2)	76
June 16	79.49% (31)	17.95% (7)	2.11% (1)	39
July 16	83.67% (41)	14.29 (7)	2.04% (1)	49
August 16	63.16% (24)	34.21% (13)	2.63% (1)	38
September 16	71.43% (25)	28.57% (10)	0% (0)	35
October 16	67.44% (29)	32.56% (14)	0% (0)	43
November 16	79.31% (69)	20.69% (18)	0% (0)	87
December 16	72.34% (34)	25.53% (12)	2.13% (1)	47
January 17	61.03% (83)	36.76% (50)	2.21% (3)	136
February 17	75.56% (68)	22.22% (20)	2.22% (2)	90
March 17	75.49% (191)	22.92% (58)	1.59% (4)	253
April 17	70.28% (149)	27.83% (59)	1.89% (4)	212
<b>Total</b>	<b>71.79% (906)</b>	<b>26.62% (336)</b>	<b>1.59% (20)</b>	<b>1262</b>

Table 1: Total numbers Vs results with monthly distribution

### Audit criteria 1

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

Month	Past infection	Un-necessary repeat
March 16	66	2
April 16	41	2
May 16	55	1
June 16	31	1
July 16	41	0
August 16	24	0
September 16	25	0
October 16	29	1
November 16	69	3
December 16	34	1
January 17	83	3
February 17	68	0
March 17	191	5
April 17	149	3
<b>Total</b>	<b>906</b>	<b>22</b>

## Results

### Audit criteria 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.

Month	Positive Ig M	Ref to FM	PCR
March 16	1	0	1
April 16	0	0	0
May 16	2	NA	2
June 16	1	NA	1
July 16	1	1	1
August 16	1	1	1
September 16	0	0	0
October 16	0	0	0
November 16	0	0	0
December 16	1	1	0
January 17	3	1	2
February 17	2	2	2
March 17	4	3	3
April 17	4	3	3
<b>Total</b>	<b>20</b>	<b>12</b>	<b>15</b>

### Audit criteria 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%

Month	Susceptible	Report susceptible (n)	repeat sample within 4wks +/- 1w (n)	Repeat outside recommended window	Seroconversion
March 16	35	54.29% (19)	20% (7)	11.43%(4)	0
April 16	14	64.29% (9)	14.29% (2)	7.14%(1)	0
May 16	19	53.63% (10)	26.32% (5)	0% (0)	0
June 16	7	28.57% (2)	28.57% (2)	0% (0)	0
July 16	7	57.14% (4)	14.29% (1)	0% (0)	0
August 16	13	61.54% (8)	7.69% (1)	7.69% (1)	0
September 16	10	30% (3)	0% (0)	0% (0)	0
October 16	14	71.43% (10)	7.14% (1)	14.29% (2)	0
November 16	18	94.44% (17)	11.11% (2)	16.67% (3)	1(IgG +v, PCR -v)
December 16	12	100% (12)	25% (3)	33.33% (4)	0
January 17	50	100% (50)	68% (17)	22% (11)	1 (IgM+v, IgG +v, DNA PCR +v)
February 17	20	90% (18)	45% (9)	5% (1)	0
March 17	58	100% (58)	51.72% (30)	12.07% (7)	0
April 17	59	100% (59)	3.39%(2)	3.39% (2)	0
<b>Total</b>	<b>336</b>	<b>83.04% (279)</b>	<b>24.40% (82)</b>	<b>10.71% (36)</b>	<b>2</b>

## 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.