UK National Screening Committee

ANTENATAL SCREENING FOR FETOMATERNAL ALLOIMMUNE THROMBOCYTOPENIA

An evidence map to outline the volume and type of evidence related to antenatal screening for fetomaternal alloimmune thrombocytopenia for the UK National Screening Committee

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The UK National Screening Committee secretariat is hosted by Public Health England.

About the UK National Screening Committee (UK NSC)

The UK NSC advises ministers and the NHS in the 4 UK countries about all aspects of population screening and supports implementation of screening programmes. Conditions are reviewed against evidence review criteria according to the UK NSC's evidence review process.

Read a complete list of UK NSC recommendations.

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Summary

This document discusses the findings of the evidence map on screening for fetomaternal alloimmune thrombocytopenia (FMAIT) in pregnant women.

Evidence maps are a way of scanning published literature to look at the volume and type of evidence in relation to a specific topic. They inform whether the evidence is sufficient to commission a more sustained analysis on the topic under consideration.

Based on the findings of this evidence map, no further work on screening for FMAIT should be commissioned at the present time.

The UK National Screening Committee (UK NSC) will return to screening for FMAIT in 3-years' time.

Introduction and approach

Background & Objectives

The UK National Screening Committee (UK NSC) external reviews (also known as evidence summaries or evidence reviews) are developed in keeping with the UK NSC evidence review process to ensure that each topic is addressed in the most appropriate and proportionate manner. Further information on the evidence review process can be accessed online.

Antenatal screening for fetomaternal alloimmune thrombocytopenia (FMAIT) is a topic currently due for an update external review.

Previous review on antenatal screening for FMAIT

The UK NSC currently recommends against antenatal screening for FMAIT. The Committee based this recommendation on the evidence provided by the 2017 review carried out by Solutions for Public Health [1].

The 2017 UK NSC review searched for evidence between January 2011 and March 2016 and identified several small observational studies about the proportion of babies with FMAIT resulting in serious adverse outcomes for the fetus or newborn such as intracranial haemorrhage (ICH) and fetal or neonatal death. The correlation between factors such as blood group, genotyping, maternal alloantibody concentration and FMAIT severity was inconsistent. A single study found women in their first pregnancy showed no correlation between any of the factors and FMAIT severity whilst 5 small observational studies showed FMAIT severity in babies from second or subsequent pregnancies did show some correlation with blood group, genotyping and maternal alloantibody concentration [1].

The 2017 UK NSC [1] review looked for studies about the optimal management of women to prevent severe outcomes in newborns from FMAIT. Due to the rarity of severe FMAIT only 2 small observational studies and 1 small RCT that was stopped due to poor recruitment were identified. The studies were focussed on the management of second and subsequent pregnancies identified following an index pregnancy, but it was unclear if the results would be applicable to a first high risk pregnancy. A Cochrane review from 2011[2] cited by the 2017 UK NSC review concluded that there was conflicting evidence on the efficacy of the use of intravenous immunoglobulin (IVIG) in combination with prednisone or alone in preventing serious outcomes from FMAIT. The Cochrane review concluded that although some treatment was better than none, an optimal treatment regime had not been determined and treatment still failed for some babies where there was a history of severe FMAIT in previous pregnancies.

As a result, the UK NSC did not recommend screening for FMAIT. In part this was due to the uncertainty about the proportion of FMAIT that results in serious adverse outcomes for the fetus/baby and the lack of evidence about a single optimal management strategy to prevent serious adverse outcomes in the newborn.

Aims of the evidence map

Evidence maps are rapid evidence products which aim to gauge the volume and type of evidence relating to a specific topic.

This evidence map has been developed to assess whether a more sustained review should be commissioned in 2020 to evaluate the volume and type of evidence on key issues related to antenatal screening for FMAIT.

The aim was to address the following questions:

1. What are the most effective screening tests to identify pregnancies at high risk of serious adverse outcomes due to FMAIT?
2. What is the optimal intervention for anti-Human Platelet Antigens type1a (HPA-1a) women to prevent serious adverse outcomes in the newborn?

The evidence map will focus on the screening performance of tests to identify pregnant women whose babies are at risk of severe FMAIT and the best treatment in terms of avoiding adverse outcomes from the condition.

The findings of this evidence map will provide the basis for discussion to support decision making on whether there is sufficient evidence to justify commissioning a more sustained review of the evidence on antenatal screening for FMAIT in 2020.

The aim of this document is to present the information necessary for the UK NSC to decide this.

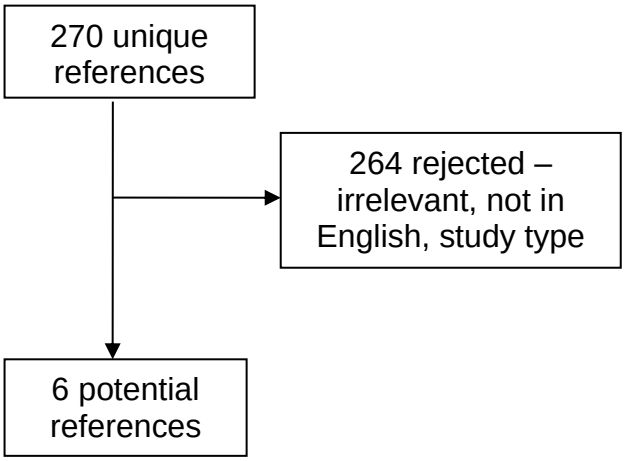
Search methods and results

The searches were conducted on 1st May 2020 on 4 databases: [Medline, Embase, CINAHL and the Cochrane Library]. The search period was restricted to January 2016 to May 2020. The detailed search strategies, including exclusion and inclusion criteria are available in appendix 1. One reviewer sifted all titles and abstracts. All references were reviewed at abstract level, though in some cases full texts were reviewed to clarify uncertain pieces of information. A formal quality appraisal of the evidence was not required, given the remit of the evidence map.

Abstract reporting tables are available in appendix 2.

The search returned 592 results. After automatic and manual de-duplication, 270 unique references were sifted for relevance to the questions and references were included in the final evidence map. A flow diagram summarising the number of studies included and excluded is presented in figure 1.

Figure 1: Summary of included and excluded publications



Summary of findings

Question 1: What are the most effective screening tests to identify pregnancies at high risk of serious adverse outcomes due to FMAIT?

Of the 270 references identified from the search, 1 met the criteria for inclusion for this question. The inclusion and exclusion criteria are summarised in appendix 1.

For this question, we included studies of pregnant women tested for biomarkers identified as predictors of severe neonatal outcome that reported clinical performance measures of the test.

One systematic review (search dates 1946 to 12 January 2016) by Kjaer et al (2019) [3] described the outcomes of 3 prospective screening studies of unselected pregnant women (n=125,000) and 10 retrospective studies of pregnant women with suspected FMAIT (n=566). The paper examined the relationship between maternal anti-HPA-1a alloantibody concentration and fetal/neonatal platelet count.

The 3 prospective screening studies included in the systematic review using the monoclonal antibody immobilization of platelet antigen (MAIPA) assay showed that among 256 HPA- 1a-immunized pregnancies, HPA-1a antibody levels in the third trimester or at delivery correlated with the newborn platelet count. The pooled positive predictive value (PPV) and negative predictive value (NPV) for severe FMAIT (<50,000 /ml^3) when screening unselected pregnancies was 54% and 95% respectively. Of the 10 retrospective studies of women with suspected FMAIT included in the systematic review, 4 (n=313) identified a statistically significant relationship (p=0.002 to 0.046) between HPA-1a antibody level and fetal or neonatal platelet count when using the MAIPA assay. Studies in which antibody analysis was done by platelet immunofluorescence test (PIFT) or enzyme-linked immunosorbent assay (ELISA) did not report a relationship between HPA-1a antibody level and fetal or neonatal platelet count.

Since the last evidence update 1 systematic review of 13 studies has been published examining the relationship between maternal HPA-1a antibody level in the third trimester of pregnancy and severity of FMAIT. These studies are likely to have been considered previously by the UK NSC as the search dates of evidence update and systematic review overlap. The volume and type of studies identified by this systematic review suggests that there is insufficient new evidence to lead to a change the UK NSC's current position on screening for FMAIT. An evidence update is not recommended at this time.

Question 2: What is the optimal intervention for anti-HPA-1a women to prevent serious adverse outcomes in the newborn?

Of the 270 potential references identified from the search, 6 met the criteria for inclusion for this question. The inclusion and exclusion criteria are summarised in appendix 1.

For this question, we included studies on the outcomes of pregnant women identified as being at risk of FMAIT managed non invasively with IVIG or corticosteroids or manged invasively with intrauterine platelet transfusion (IUPT) or caesarean section (CS).

The studies included are:

- systematic review of the antenatal management of FMAIT (Winklehorst et al 2017) [4]
- a randomised controlled trial (RCT) generating 2 papers reporting post hoc analysis of data about the outcomes of treatment for FMAIT (Lakkaraja et al, 2016 and Lakkaraja, Jin et al, 2016) [5],[6]
- 3 retrospective cohort studies of outcomes of women and babies managed for FMAIT in pregnancy (Ronzoni et al 2019, Kamphuis et al 2016, and Kamphuis, et al 2017) [7], [8], [9]

Winklehorst et al (2017) [4] included 4 RCTs and 22 non randomised studies in their systematic review (n=5 to 99) (search dates 1946 to December 2015). Pooling results was not possible due to the varied treatment regimes used across the studies. The most common non invasive treatment administered to pregnant women was IVIG. IVIG only treatment had a 98.7% success rate for preventing intracranial haemorrhage. The outcomes of the treatment regime combining corticosteroids with IVIG was reported to be inconsistent.

Pregnancies where fetal blood sampling (FBS) or IUPT had been carried out resulted in a relatively high complication rate (54 complications in 497 treated pregnancies) with 14/54 complications resulting in fetal or neonatal death. The most frequently reported complication was emergency caesarean section at <34 weeks gestation.

The primary objective of the original RCT (n=102) that resulted in 2 publications [4],[5], reporting post hoc data analysis was to evaluate the differences in outcome of receiving different IVIG regimens with or without corticosteroids. The RCT ran from 2001 to 2013 and the post hoc analysis focussed on outcomes of escalation therapy at 32 weeks in women who did not respond to either IVIG treatment regime (n=27) [5] and differences in response to IVIG by blood group [6].

Of the 3 retrospective cohort studies, 2 focussed on sub group analysis of data submitted to the No Intra Cranial Haemorrhage registry (NOICH) about the management of 615 pregnancies in women with FMAIT between 2001 and 2010 [7],[8]. The overall perinatal mortality rate was 1.14% (n=7) and occurred in pregnancies where there was

no treatment of FMAIT. Intracranial haemorrhage was reported in 9 offspring who received treatment and 14 who did not receive treatment [8].

The third retrospective cohort study focused on outcomes of management of FMAIT in 54 pregnancies from 1 hospital in Canada from between 1993 and 2016[9]. No differences were found in IVIG treatment duration or dosage between women who responded to treatment and those who did not. Fetal platelet count at birth was significantly lower in non responders compared to responders. No intracranial haemorrhages occurred.

Since the last UK NSC review there have been new studies published in the form of a systematic review, post hoc data analysis of an RCT and retrospective cohort studies about the optimal intervention of anti-HPA-1a women to prevent serious adverse outcomes in the newborn. The studies had small sample sizes and heterogeneity of treatment regime (precluding the pooling of results). At present the limitations of the new evidence in this key area is unlikely to lead to a change in the UK NSC's current position.

Conclusions

The findings of this evidence map are unlikely to impact on current recommendations on screening for FMAIT as the limitations of the volume and type of the new evidence identified would be unlikely change those conclusions.

Recommendations

On the basis of this evidence map, the volume and type of evidence related to screening for FMAIT is currently insufficient to justify an update review at this stage and so should be re-considered in 3-years' time.

Appendix 1 — Search strategy for the evidence map

SOURCES SEARCHED: Medline, Embase CINHAL and Cochrane Library

DATES OF SEARCH: January 1st 2016 to 1st May 2020

SEARCH STRATEGIES:

Medline			**Embase**		
	Search	Results		Search	Results
1	Thrombocytopenia, Neonatal Alloimmune/	353	1	neonatal alloimmune thrombocytopenia/	793
2	((allo-immun* or alloimmun*) adj thrombocytop?enia).ti,ab,kw.	932	2	((allo-immun* or alloimmun*) adj thrombocytop?enia).ti,ab,kw.	1528
3	(fmait or fnait or naitp).ti,ab,kw.	74	3	(fmait or fnait or naitp).ti,ab,kw.	489
4	1 or 2 or 3	1044	4	1 or 2 or 3	1691
5	(comment or editorial or letter or review).pt.	4440421	5	(conference* or editorial or letter or note or "review").pt.	9646938
6	4 not 5	767	6	4 not 5	858
7	limit 4 to "reviews (maximizes specificity)"	15	7	limit 4 to "reviews (maximizes specificity)"	18
8	6 or 7	778	8	6 or 7	872
9	limit 8 to (english language and yr="2011 -Current")	247	9	limit 8 to (english language and yr="2011 -Current")	293
CINHAL			**Cochrane**		
1	TX (((allo-immun* or alloimmun*) N1 thrombocytop?enia)) OR TX fmait OR TX fnait OR TX naitp Limiters - Published Date: 20110101-20201231; English Language	40	#1	MeSH descriptor: [Thrombocytopenia, Neonatal Alloimmune] explode all trees	
			#2	(((allo-immun* or alloimmun*) NEXT thrombocytop*)):ti,ab,kw OR (fmait or fnait or naitp):ti,ab,kw	
			#3	#1 or #2 with Publication Year from 2011 to 2020, in Trials	12

Results by database

Medline	**247**
Embase	**293**
CINHAL	**40**
Cochrane Library	**12**
Total	**592**

After the exclusion of duplicates, 270 references remained.

Inclusions and exclusions

Publications not in the English language, case reports, conference abstracts, trial protocols and comment/editorials/letters were excluded.

Eligibility for inclusion in the map

Question 1	What are the most effective screening tests to identify pregnancies at high risk of serious adverse outcomes due to FMAIT?
Population	All pregnant women
Intervention	• HPA antigen typing • HLA DRB3*0101 typing • Anti-HPA antibody detection • Other markers identified as a predictor of severe neonatal outcome
Comparator	Reference test
Outcomes	Study reporting clinical performance measures and SRs of these: • Sensitivity • Specificity • False positive rate • False negative rate • PPV/NPV

Question 2	What is the optimal intervention for anti-HPA-1a women to prevent serious adverse outcomes in the newborn?
Population	• Anti HPA-1 women • Pregnant women with a previous child affected by FMAIT • Screen detected women
Intervention	• IVIG • Intrauterine platelet transfusion • Corticosteroids • Elective caesarean section
Comparator	Usual care Observational/ non comparative studies

Outcomes	• Fetal/ neonatal death • Bleeding (ICH and other bleeding) • Premature birth • Adverse events for the mother (steroid and immunoglobulin induced) • Emergency caesarean section • Neonatal morbidity • Platelet count at birth

Appendix 2 – Abstract reporting tables

Question 1

TITLE	
Citation	Kjaer et al (2019)[3]
BACKGROUND	
Study type	Systematic review of 13 studies published between 1989 and 2014 comprising 3 prospective studies of screening programmes (n=125,000) and 10 retrospective studies of pregnant women with suspected FMAIT (n=566). *[From full text]*
Objectives	To examine any relationship between maternal anti- HPA-1a alloantibody concentration and fetal/neonatal platelet count, which could potentially serve as a noninvasive strategy to identify high-risk pregnancies. *[From full text]*
Components of the study	*Population* – studies reporting outcomes for five or more pregnant women *Intervention* – N/A *Control* – N/A *Outcomes* – platelet count and HPA-1a antibody determination *[From full text]*
RESULTS	
Results	Results from prospective screening studies using the monoclonal antibody immobilization of platelet antigen (MAIPA) assay (n=125,000) showed that among 256 HPA- 1a-immunized pregnancies, HPA-1a antibody levels in the third trimester or at delivery correlated with the newborn platelet count, (titres ≥ 1:32, positive predictive value (PPV) 75% and negative predictive value (NPV) 88%). The PPV and NPV of severe FMAIT (<50,000/ml^3) using an antibody level of 3 IU/ml when screening unselected pregnancies was 54% (95% CI: 43–63%) and 95% (95% CI: 86–98%), respectively. Four retrospective studies women with suspected FMAIT (n=313) identified a statistically significant relationship (p-: 0.002– 0.046) between HPA-1a antibody level and fetal or neonatal platelet count (<20,000/ml^3 or <50,000/ml^3) when using the MAIPA assay.

	Studies in which antibody analysis was done by platelet immunofluorescence test (PIFT) or enzyme-linked immunosorbent assay (ELISA) did not report a relationship between HPA-1a antibody level and fetal or neonatal platelet count suggesting that these methods may not be as suitable for quantitative analysis. *[From full text]*
Conclusions	HPA-1a antibody level has the potential to predict the severity of FMAIT in a screening programme.

Question 2

TITLE	
Citation	Winklehorst et al 2017[4]
BACKGROUND	
Study type	Systematic review of antenatal management in fetal and neonatal alloimmune thrombocytopenia.
Objectives	Perform a systematic review of all available literature on antenatal management strategies to inform and assist in the development of guidelines for the treatment of FMAIT (search dates 1946 to December 2015).
Components of the study	*Population*: pregnant women with pregnancies at risk for FMAIT or fetuses/neonates diagnosed with FMAIT *Intervention*: IVIG, steroids, or IUPT Comparator: none *Outcomes:* intracranial haemorrhage and fetal/neonatal platelet count *[From full text]*
RESULTS	
Results	Overall 4 randomized controlled trials and 22 nonrandomized studies were included. Pooling of results was not possible due to considerable heterogeneity of the treatment strategies used. Most studies found comparable outcomes regarding the occurrence of intracranial haemorrhage, regardless of the antenatal management strategy applied; FBS, IUPT, or IVIG with or without corticosteroids.

	The most common non invasive treatment administered to pregnant women was IVIG, primarily in a weekly dose of 1 g/kg. IVIG only treatment had a 98.7% success rate for preventing ICH (4 ICHs occurred in 315 pregnancies). There is no consistent evidence for the value of adding steroids to IVIG. There are insufficient data to recommend the optimal dose and, a specific gestational age to start the treatment. However, the data support the treatment of high-risk pregnancies (ie, sibling suffered from an ICH) with a dose of 1 g/kg per week of IVIG, started between 12 and 20 weeks' gestation Of 26 studies that used either IVIG or corticosteroids, 11 reported the side effects of the treatment. Headache and rash were the most frequently reported side effects of IVIG treatment, leading to discontinuing of the treatment in 1 patient. Pregnancies where FBS or IUPT had been carried out resulted in a relatively high complication rate (54 complications in 497 treated pregnancies) of which 14/54 complications resulted in fetal or neonatal death. The most frequently reported complication was emergency caesarean section at <34 weeks gestation. *[From full text]*
Conclusions	Non invasive management in pregnant mothers who have had a previous neonate with FMAIT is effective without the relatively high rate of adverse outcomes seen with invasive strategies. The optimal approach, involves weekly administration of IVIG, with or without the addition corticosteroids. *[From full text]*

TITLE	
Citation	Lakkaraja M, et al 2016[5]
BACKGROUND	
Study type	Randomised controlled trial (RCT) data post-hoc analysis
Objectives	To evaluate whether escalation of therapy at 32 weeks allows the omission of fetal blood sampling in all fetal-neonatal alloimmune thrombocytopenia effected patients.
Components of the study	*Population*: 99 women with fetal-neonatal alloimmune thrombocytopenia whose prior affected child did not have an intracranial haemorrhage

	Intervention: women received different IVIG regimes of 2 g/kg per week or 1 g/kg per week plus prednisone 0.5 mg/kg per day, starting at 20-30 weeks of gestation. Escalated therapy (IVIG2 g/kg per week plus prednisone 0.5 mg/kg per day) was initiated at 32 weeks when fetal counts were <50,000/ml^3 or when fetal blood sampling was not performed Comparator: No escalation therapy in pregnancies where fetal platelet count is <50,000/ml^3 *Outcomes:* Fetal platelet count and intracranial haemorrhage *[From full text]*
RESULTS	
Results	In a post hoc analysis, 19 offspring undergoing fetal blood sampling at 32 weeks had fetal platelet counts<50,000/ml^3 despite their initial treatment. 13/19 women received escalated therapy and of those 11(85%) had an increased fetal platelet count of >50,000/ml^3 whilst 6/19 women did not receive the escalation therapy and 1(17%) had an increased fetal platelet count >50,000/ml^3 (p=0.01). No intracranial haemorrhage was reported. *[From full text]*
Conclusions	The 2 protocols of intensive initial treatment followed by empiric escalation of therapy at 32 weeks of gestation are reasonably safe, effective in increasing fetal platelet counts, and allow omission of fetal blood sampling by increasing the fetal platelet count in almost all cases.

TITLE	
Citation	Lakkaraja M, Jin J et al 2016 [6]
BACKGROUND	
Study type	Randomised controlled trial (RCT) post-hoc analysis
Objectives	To assess the frequency of anaemia in pregnant women who received IVIG treatment for FMAIT and to determine the role of maternal blood group (BG) in developing anaemia

Components of the study	*Population:* A total of 102 women with an FMAIT affected baby without a previous sibling who had sustained an intracranial haemorrhage. *Intervention:* Women were assigned to receive 2 g/kg/week IVIG (Arm A, n = 51) or 1 g/kg/week IVIG and 0.5 mg/kg/day prednisone (Arm B, n = 51), starting at 20 to 30 weeks of gestation until delivery. *Comparator:* Higher (2 g/kg/week) and lower (1 g/kg/week IVIG and 0.5 mg/kg/day prednisone) treatment regimes. *Outcomes:* Haemoglobin level and mean corpuscular volume (MCV) values were tracked and compared among women with BGs A, B, AB, and O in each arm *[From full text]*
RESULTS	
Results	The mean decrease in haemoglobin level in women with BG-non-O was 1.9 g/dL and in women with BG-O was 1.1 g/dL (p =0.004). 21 of 36 (58.3%) women receiving IVIG 2 g/kg/ week developed anaemia compared to 9 of 24 (37.5%) women receiving 1 g/kg/week IVIG and 0.5 mg/kg/day prednisone (p = 0.015). indicating that patients in the higher dose group were more likely to develop anaemia For women receiving the higher IVIG dose, 17 of 21 (haemoglobin < 10 g/dl) mothers with BG-A and/or BG-B had anaemia compared to 3 of 15 mothers without anaemia (p = 0.0005). BG was unrelated to anaemia in women receiving the lower IVIG dose plus prednisone. *[From full text]*
Conclusions	FMAIT women with BG-non-O more frequently develop anaemia secondary to high-dose IVIG infusion (2 g/kg/week) and maternal Hb requires monitoring. IVIG at 1 g/kg/week did not cause anaemia in women with BG-non-O; concomitant prednisone may alleviate the IVIG effect. Maternal BG could influence selection of antenatal treatment for FMAIT. *[From full text]*

TITLE	
Citation	Ronzoni et al 2019 [7]
BACKGROUND	

Study type	Retrospective cohort study of the management of 49 women (54 pregnancies) with FMAIT between 1993 and 2016 in 1 Canadian hospital. *[From full text]*
Objectives	To review FBS related risk, fetal response to maternal IVIG, and CS rate in pregnancies with a history of FMAIT.
Components of the study	*Population:* Women who were pregnant and identified as having FMAIT *Intervention*: FBS, CS, IVIG *Comparator:* Outcomes of women who responded to IVIG treatment were compared with women who did not respond to IVIG treatment. *Outcomes:* ICH, rate of caesarean section, platelet count at birth, adverse outcome from fetal blood sampling *[From full text]*
RESULTS	
Results	An FBS-related risk occurred in 1.6% (2/119) of procedures. Maternal characteristics did not differ between responders to IVIG (fetal platelet level normal) (n =21) and non-responders (fetal platelet low and in utero fetal platelet transfusion required) (n = 21). HPA-1a antibody was detected in all non-responders and in 72% of responders (p <0.01). In non responders the older sibling (index case) fetal platelet count at birth was significantly lower than in older siblings of responders (median platelet count responders = 20,000/ml^3 [Interquartile range 8–43] vs. non responders = 9,000/ml^3 [IQR 4–18], p < 0.02). No differences were found in IVIG treatment duration or dosage between women who responded to treatment and those who didn't. Fetal platelet count at birth was significantly lower in non responders compared to responders. No intracranial hemorrhages occurred. The overall CS rate was 36.7% (n=15). CS in 2 of the pregnancies in the non responder group was prompted by a combination of FMAIT and other factors (early spontaneous labour and preeclampsia plus HELPP syndrome). The remaining CS (n=13) were performed for obstetric indications. *[From full text]*
Conclusions	Maternal IVIG treatment of pregnant women with a previous history of FMAIT is effective but is not associated with a uniform fetal platelet response. A combination of medical treatment and repeated fetal platelet

	transfusions for non-responders results in a significant increase in fetal platelet count at birth, with no associated cases of ICH or neonatal haemorrhage *[From full text]*

TITLE	
Citation	Kamphuis et al 2016 [8]
BACKGROUND	
Study type	Retrospective observational cohort study of the management of 615 pregnancies in women with FMAIT between 2001 and 2010 with data from the No Intra Cranial Haemorrhage (NOICH) registry. *[From full text.]*
Objectives	To evaluate the management and outcome of a large international cohort of cases of pregnancies complicated by fetal and neonatal alloimmune thrombocytopenia
Components of the study	*Population*: Women whose pregnancies were affected by FMAIT and whose data were submitted to the NOICH registry. *Intervention*: Any or no treatment for FMAIT *Comparator:* Invasive, non invasive treatments and no treatment *Outcomes:* Intracranial haemorrhage, fetal or neonatal death *[From full text]*
RESULTS	
Results	In 273/615 pregnancies some form of antenatal treatment was given. Overall perinatal mortality was 1.14% (n = 7) and occurred in offspring of mothers who received no antenatal treatment. Those who were treated received interventions ranging from cordocentesis with intrauterine platelet transfusion (IUPT) to maternal administration IVIG, steroids, or a combination of those. In most pregnancies (n = 138) a single treatment with IVIG was given, in 24 cases with 0.5 and in 102 cases with 1.0 g/kg/week (n = 12 unknown). In 124 pregnancies invasive treatment was offered. There was no difference in the frequency of intracranial haemorrhage or inter uterine fetal death in previous siblings between the invasive and the non-invasive group [26/124 (21%) vs. 28/138, (20%), p = 1.0]

	Intracranial haemorrhage was reported in 9 offspring who received treatment and 14 who didn't receive treatment. Of the 9 who received treatment 1 occurred before and 4 after invasive treatment had begun. The remaining 4 cases of ICH were diagnosed in pregnancies prior to treatment with IVIG. A decline in invasive procedures is seen over the years (from 22% in 2005 to 0% in 2008, 2009, and 2010). A single centre performed cordocentesis up to 2009 (in Canada; n = 25). *[From full text]*
Conclusions	Antenatal treatment for FMAIT results in favourable perinatal outcome. Over time, in most centres, treatment for FMAIT changed from an invasive to a complete non-invasive procedure.

TITLE	
Citation	Kamphuis, Paridaans et al 2016 [9]
BACKGROUND	
Study type	Retrospective analysis of a sub group of the data submitted to the NOICH registry. *[From full text.]*
Objectives	To describe the rate of severe thrombocytopenia reported in pregnancies receiving two different doses of IVIG.
Components of the study	*Population*: Women whose pregnancies were affected by FMAIT and whose data were submitted to the NOICH registry. *Intervention*: Data from women who had received IVIG at 0.5 or 1.0 g/kg/week were selected from the NOICH registry. *Comparator:* Women treated with IVIG at higher and lower dosages *Outcomes:* Neonatal platelet count at birth, amount of severity of thrombocytopenia and rate of intracranial haemorrhage *[From full text]*
RESULTS	
Results	A total of 109 women were included in the study, 46 who received 0.5 g/kg/week IVIG and 63 who received 1.0 g/kg/week IVIG. There was no difference in platelet count at birth (mean, 112 vs. 119; crude difference,

	7; confidence interval [CI], -37.4 to 23.7]) and incidence of severe thrombocytopenia (<30,000/ml^3; n = 7/46 vs. n = 7/63; odds ratio, 1.43 [CI, 0.46–4.42]). No ICH occurred. *[From full text]*
Conclusions	In pregnancies with FMAIT with a previous affected child without ICH, treatment with IVIG in a weekly dose of 0.5 or 1.0 g/kg results in comparable neonatal platelet count at birth and severity of thrombocytopenia. *[From full text]*

References

Introduction

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