

**1° Transfusion Seminar**  
*October 16-17, 2025 - Vilnius*

**2025 EEMEA**  
**SCIENTIFIC SEMINARS**



***FNAITP Uncovered: Diagnostic and Transfusion Strategies Through the Lens of a Clinical Case***

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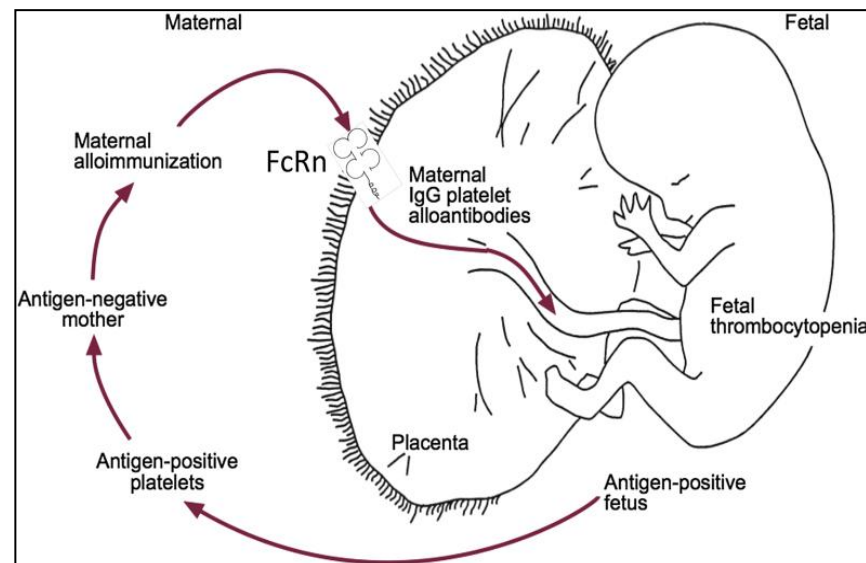
**ASU FC**  
Azienda sanitaria  
universitaria  
Friuli Centrale



REGIONE AUTONOMA  
FRIULI VENEZIA GIULIA

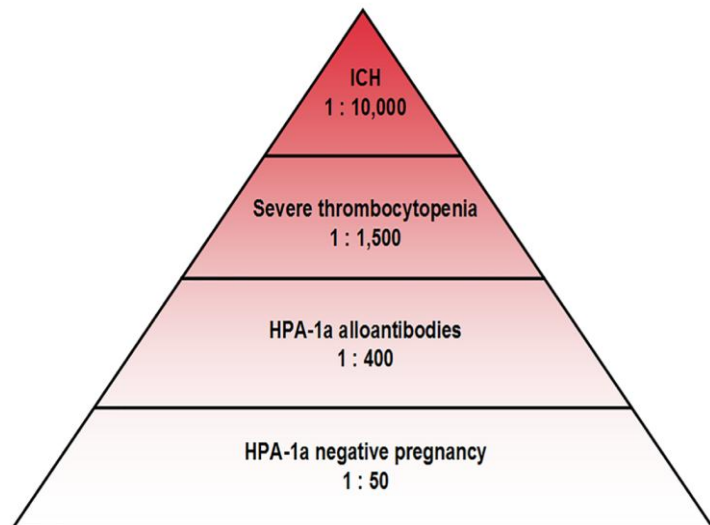
# Fetal and Neonatal Alloimmune Thrombocytopenia

- **FNAIT** is a rare but severe disease in pregnancy
- FNAIT is defined by a **fetal/neonatal PLT count  $<100 \times 10^9/L$** , severe thrombocytopenia is defined as a PLT count  $<50 \times 10^9/L$ .
- **Incidence** of approximately **1 in 1500** pregnancies
- Can occur in first pregnancy
- Rate of recurrence in subsequent sibling: 85–90%



# Clinical Presentation

- **Asymptomatic** thrombocytopenia
- Skin **bleedings** (petechiae) or severe organ bleeding
- **Intracranial haemorrhage** (ICH), mostly discovered postnatally, in the absence of antenatal screening
- ICH (10-20% FNAIT cases) can lead to **perinatal death** or lifelong **neurologic sequelae**
- Cannot predict FNAIT severity by lab tests



# Management strategies

## Antenatal:

- Intravenous immunoglobulin (IVIg) – Steroids
- Platelet transfusions
- Caesarean

## Postnatal:

- Platelet transfusions

EXPERT REVIEW OF HEMATOLOGY, 2017  
VOL. 10, NO. 8, 729–737  
<https://doi.org/10.1080/17474086.2017.1346471>



REVIEW

OPEN ACCESS Check for updates

Fetal and neonatal alloimmune thrombocytopenia: evidence based antenatal and postnatal management strategies

Dian Winkelhorst<sup>a,b</sup>, Dick Oepkes<sup>a</sup> and Enrico Lopriore<sup>c</sup>

**Table 1.** Overview antenatal and postnatal management strategies in FNAIT.

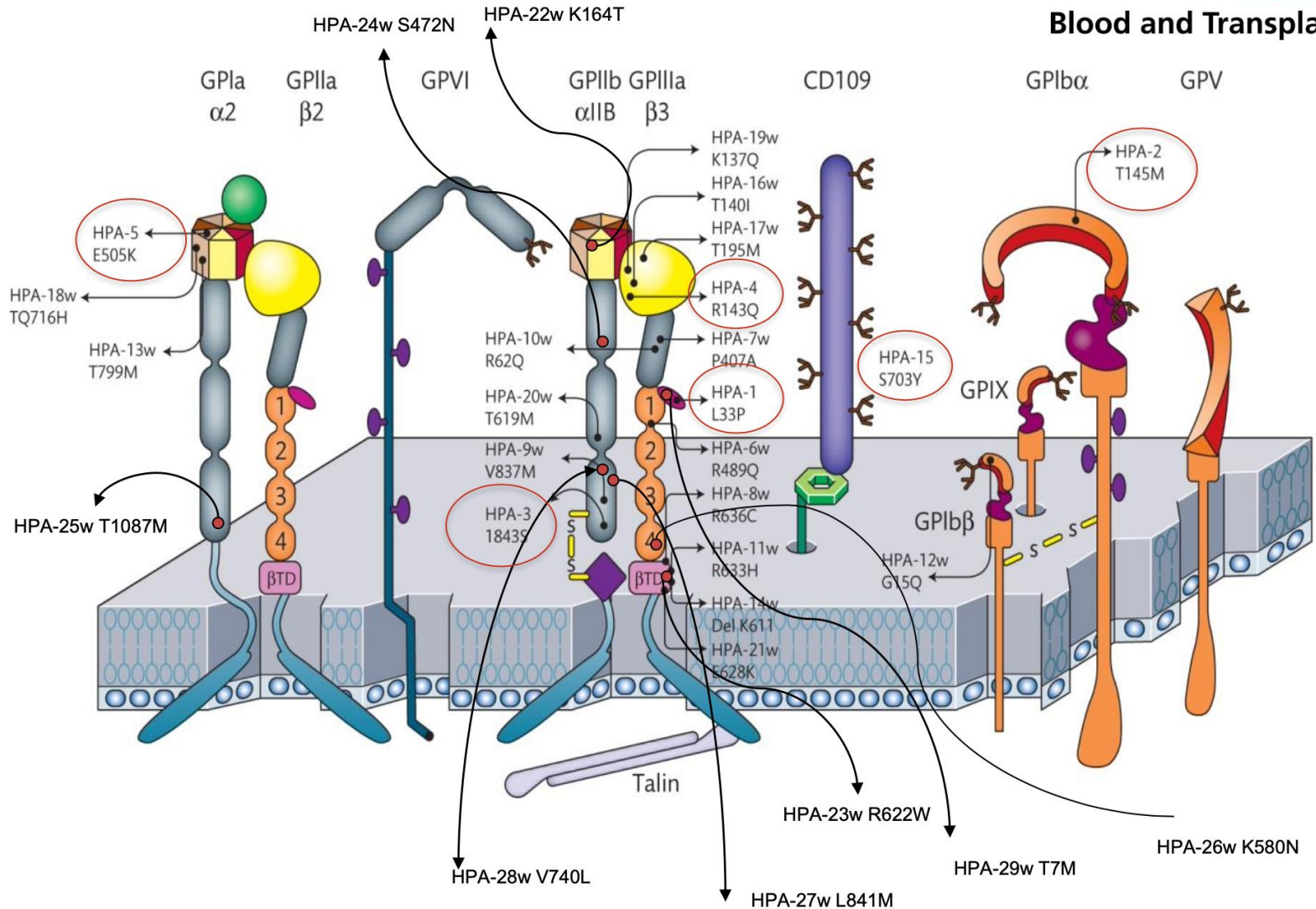
| Treatment            | Antenatal                                |                                                   |                                                         | Postnatal                                                                     |                                             |                                             |
|----------------------|------------------------------------------|---------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|
|                      | Indication/Dose                          | Benefit                                           | Risk                                                    | Indication/Dose                                                               | Benefit                                     | Risk                                        |
| Platelet transfusion | Various, from weekly to predelivery only | Treatment monitoring<br>Prevents thrombocytopenia | High complication rate (fetal loss, emergency delivery) | First choice<br>PLT < 20–30 prophylaxis<br>PLT < 50–100 when bleeding         | Direct effect on platelet count             | Infections<br>Allergic or febrile reactions |
| IVIg                 | First choice<br>0.5 g or 1 g/kg/wk       | Noninvasive<br>Prevents ICH                       | Blind administration<br>Expensive                       | In addition to random PTx 1 g/kg/day for 2–5 days<br>Not after antenatal IVIg | Prolongs and optimizes effect of random PTx | Delay in response                           |
| Corticosteroids      | In addition to IVIg<br>Prednisone 0.5 mg | Noninvasive, otherwise benefit unclear            | Dose-related side effects<br>Oligohydramnios            | No indication<br>Methylprednisone 1 mg iv every 8 h                           | Benefit unclear                             | No evidence                                 |

PLT: platelet count,  $\times 10^9/L$ ; PTx: platelet transfusion; IVIg: intravenous immunoglobulins; ICH: intracranial hemorrhage.

# Human Platelet Antigens

**NHS**

**Blood and Transplant**



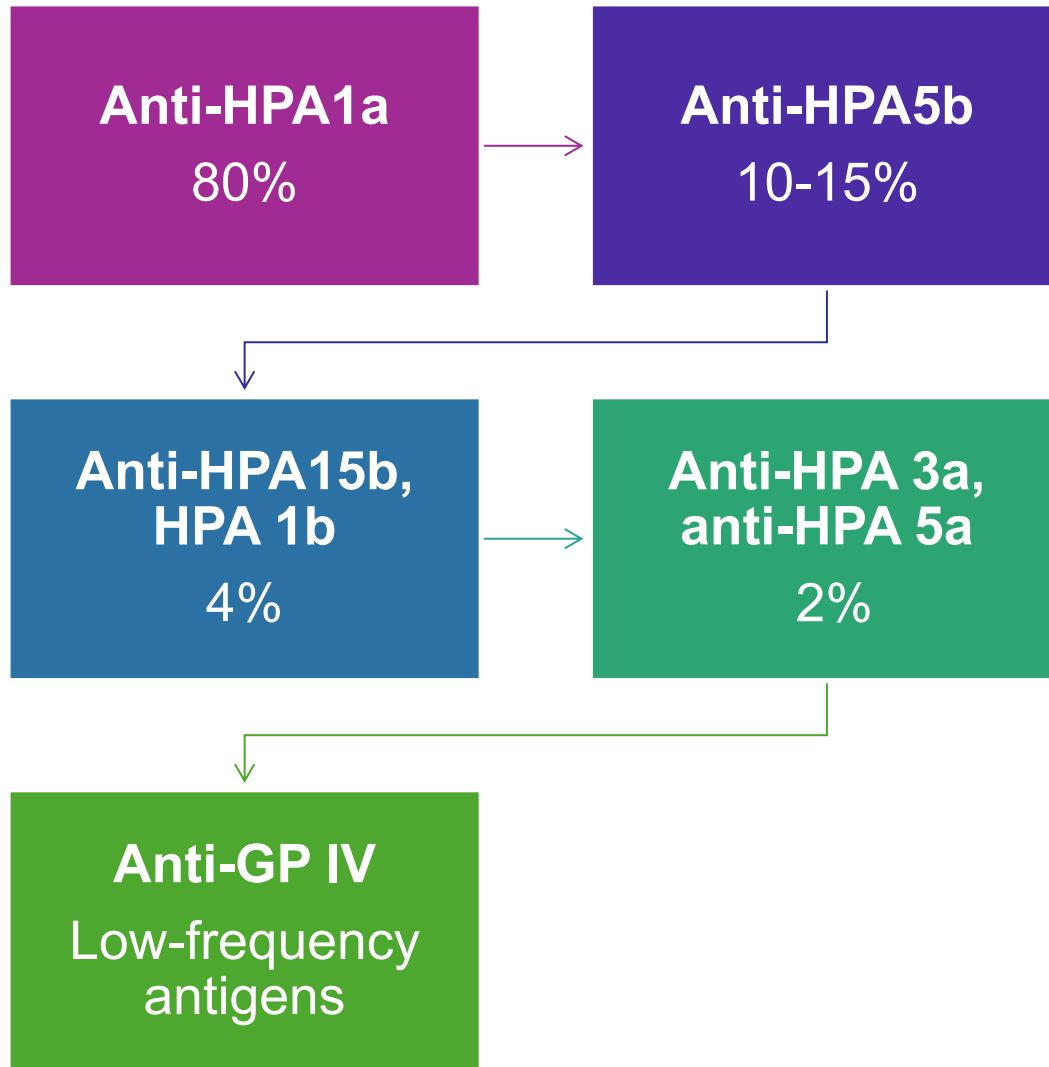
# HPA Nomenclature

| System | Antigen | Original names              | Glycoprotein / SNP | CD    | System | Antigen | Original names | Glycoprotein / SNP | CD    |
|--------|---------|-----------------------------|--------------------|-------|--------|---------|----------------|--------------------|-------|
| HPA-1  | HPA-1a  | Zwa, PIA1<br>Zwb,PIA2       | GPIIIa /L33P†      | CD61  | HPA-15 | HPA-15a | Govb           | CD109 / S682Y      | CD109 |
|        | HPA-1b  |                             |                    |       |        | Gova    |                |                    |       |
| HPA-2  | HPA-2a  | Koa, Kob                    | GPIbα / T145M      | CD42b |        | HPA-16b | Duva           | GPIIIa / T140I     | CD61  |
|        | HPA-2b  |                             |                    |       |        | Vaa     | GPIIIa / T195M | CD61               |       |
| HPA-3  | HPA-3a  | Baka, Leka<br>Bakb          | GPIIb / I8435      | CD41  |        | HPA-18b | Caba           | GPIa/ Q716H        | CD49b |
|        | HPA-3b  |                             |                    |       |        | Sta     | GPIIIa / K137Q | CD61               |       |
| HPA-4  | HPA-4a  | Yukb, Pena<br>Yuka, Penb    | GPIIIa / R143Q     | CD61  |        | HPA-19b | Kno            | GPIIb/ T619M       | CD41  |
|        | HPA-4b  |                             |                    |       |        | Nos     | GPIIIa/ E628K  | CD61               |       |
| HPA-5  | HPA-5a  | Brb, Zavb<br>Bra, Zava, Hca | GPIa / E505K       | CD49b |        | HPA-20b | Sey            | GPIIb/ K164T       | CD41  |
|        | HPA-5b  |                             |                    |       |        | HPA-21b | Hug            | GPIIIa/ R622W      | CD61  |
|        | HPA-6b  | Caa, Tua                    | GPIIIa / R489Q     | CD61  |        | HPA-22b | Cab2a+         | GPIIb/ S472N       | CD41  |
|        | HPA-7b  | Moa                         | GPIIIa / P407A     | CD61  |        | HPA-23b | Swia           | GPIa/ T1087M       | CD49b |
|        | HPA-8b  | Sra                         | GPIIIa / R636C     | CD61  |        | HPA-24b | Seca           | GPIIIa / K580N     | CD61  |
|        | HPA-9b  | Maxa                        | GPIIb / V837M      | CD41  |        | HPA-25b | Cab3a+         | GPIIb / L841M      | CD41  |
|        | HPA-10b | Laa                         | GPIIIa / R62Q      | CD61  |        | HPA-26b | War            | GPIIb / V740L      | CD41  |
|        | HPA-11b | Groa                        | GPIIIa / R633H     | CD61  |        | HPA-27b | Khab           | GPIIIa / T33M†     | CD61  |
|        | HPA-12b | Iya                         | GPIbβ / G15E       | CD42c |        | HPA-28b | Laba           | GPIIb / Q806H      | CD41  |
|        | HPA-13b | Sita                        | GPIIIa / K611del   | CD49b |        | HPA-29b | Cab4b+         | GPIX / P123L       | CD42a |
|        | HPA-14b | Oea                         | GPIIIa / K611del   | CD61  |        | HPA-30b | Domb           | GPIIIa / N174S     | CD61  |
|        |         |                             |                    |       |        | HPA-31b | Bla            | GPIIIa / D458G     | CD61  |
|        |         |                             |                    |       |        | HPA-32b | Bzha           | GPIIIa / R91W      | CD61  |
|        |         |                             |                    |       |        | HPA-33b | Efsa           | GPIIIa / R479H     | CD61  |

<https://versiti.org/products-services/human-platelet-antigen-hpa-database>

ISBT Platelet Immunology WP repository

The incidence of HPA-alloAbs varies due to genetic variation between populations:



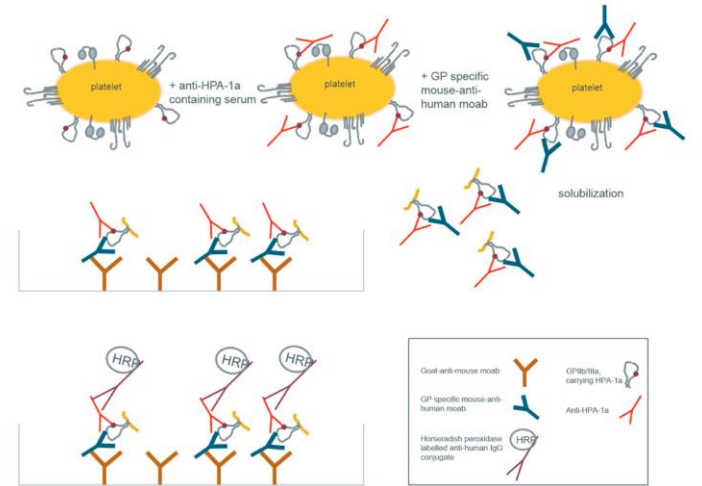
**HPA Abs frequency  
in Caucasians**

| Specificities           | Japan<br>(Matsuhashi et al) | Germany<br>(Mueller-Eckhardt et al) | U.S.<br>(Davoren et al) | U.K.<br>(Ghevaert et al) |
|-------------------------|-----------------------------|-------------------------------------|-------------------------|--------------------------|
| HPA-1a                  | 1.8%                        | <b>89.8%</b>                        | <b>79.3%</b>            | <b>75.0%</b>             |
| HPA-1b                  |                             | 0.8%                                | 3.7%                    |                          |
| HPA-2b                  | 2.7%                        |                                     | 0.1%                    |                          |
| HPA-3a                  | <b>13.3%</b>                | 0.8%                                | 1.7%                    | 1.0%                     |
| HPA-3b                  | 0.9%                        |                                     | 0.8%                    |                          |
| HPA-4a                  | 3.5%                        |                                     | 0.2%                    |                          |
| HPA-4b                  | <b>43.4%</b>                |                                     | 0.2%                    |                          |
| HPA-5a                  | 2.7%                        |                                     | 1.0%                    | 0.5%                     |
| HPA-5b                  | <b>15.9%</b>                | <b>7.6%</b>                         | <b>9.4%</b>             | <b>15.5%</b>             |
| HPA-6bw                 | 4.4%                        |                                     | 0.1%                    |                          |
| HPA-7new                | 1.8%                        |                                     |                         |                          |
| HPA-15b                 | 0.9%                        |                                     |                         | 4.0%                     |
| Nak <sup>a</sup> (GPiV) | <b>7.1%</b>                 |                                     | 0.4%                    |                          |

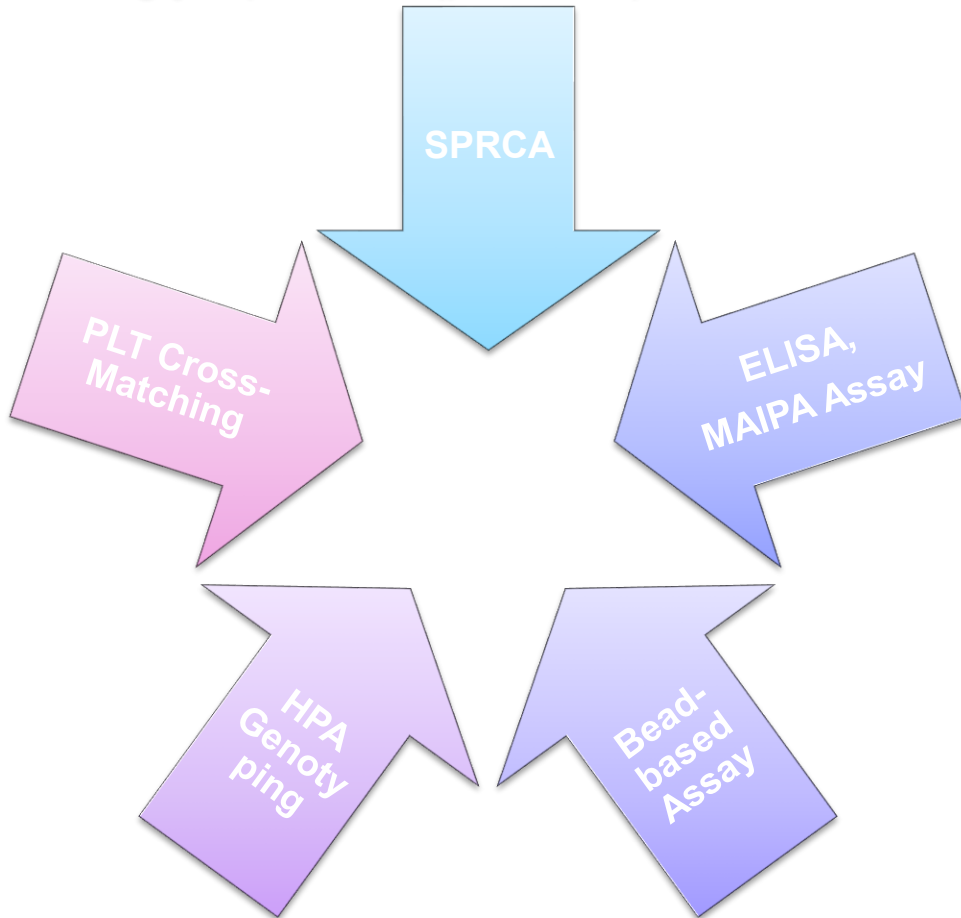
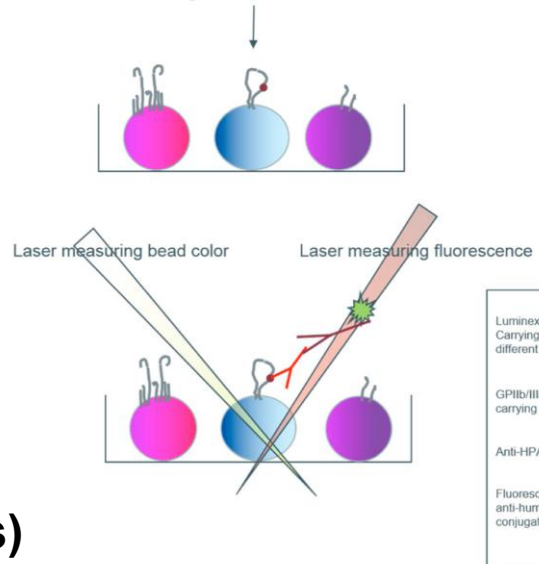
# Diagnostic strategies in FNAITP

*Necessary for detection and therapeutic decisions*

- Intact platelets (phase I and II)
- Isolated glycoproteins (phase III)



Anti-HPA-1a containing Serum + fluorescence labelled anti-Human IgG



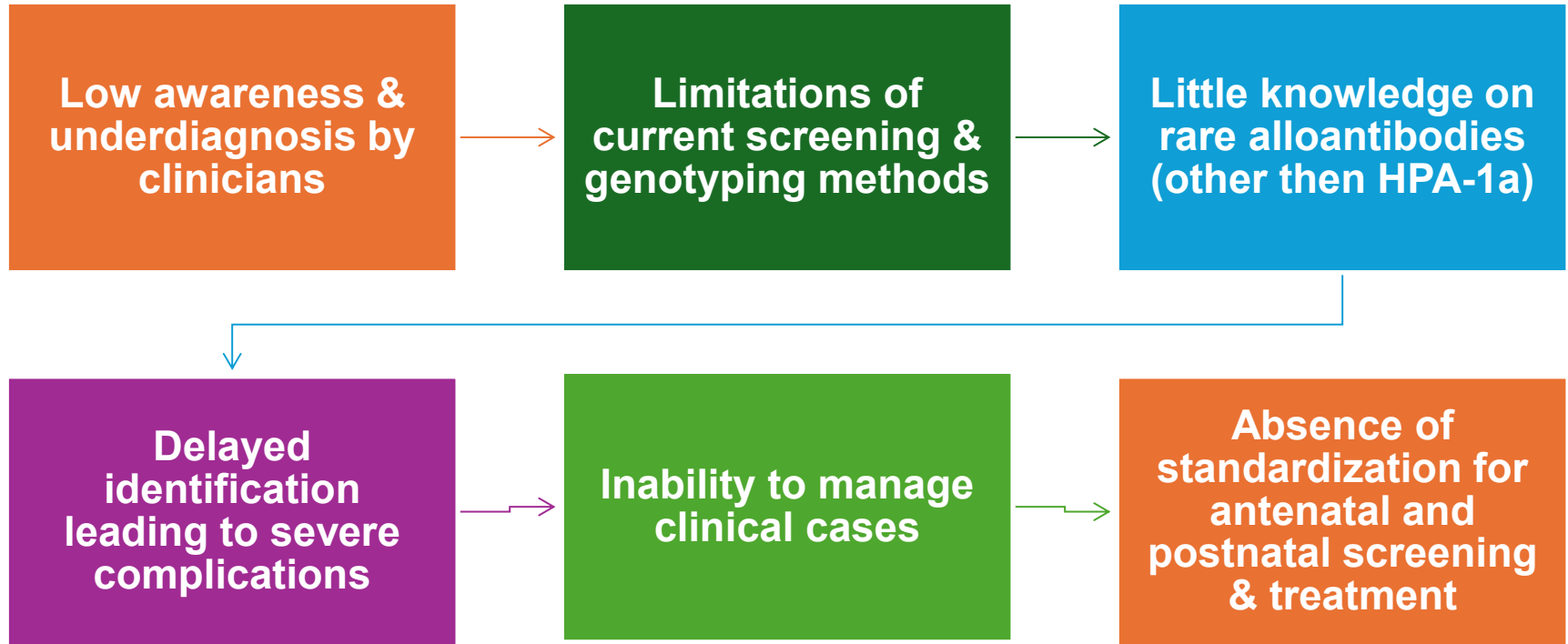
- Commercial kits (ELISA or Luminex techniques)

# How to select the methods for PLT antibody testing

- HPA frequency distribution of the population
- Target of patients tested
- Availability of technologies and personnel expertise
- Different sensitivity/specificity for different HPA Abs
- Cost-effectiveness

| Method  | Sensitivity | Specificity | Time | Cost |
|---------|-------------|-------------|------|------|
| SPRCA   | ↑           | ↓           | 1h   | €    |
| MACE    | ↓           | ↑           | 3-4h | €    |
| MAIPA   | ↓           | ↑           | 6-8h | €    |
| LUMINEX | ↑           | ↑           | 2-3h | €€€  |

# Diagnostic problems in FNAITP



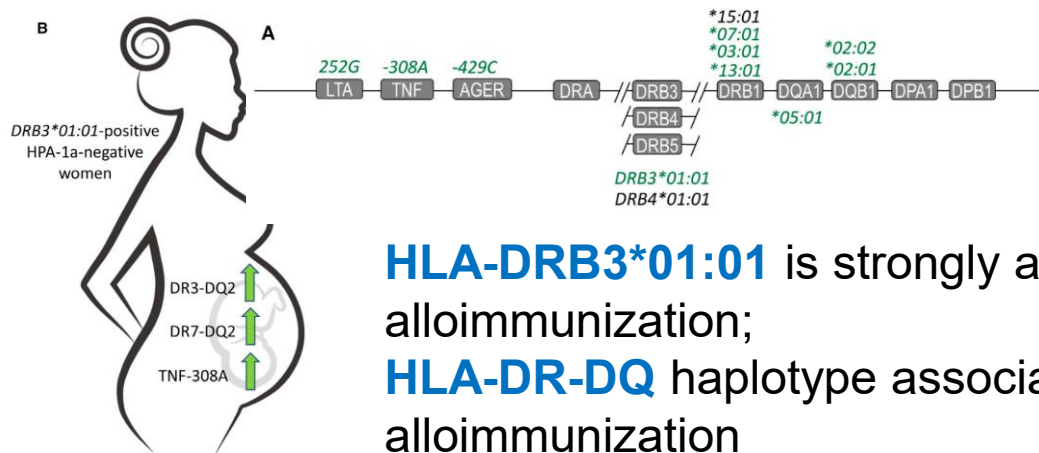
# Management strategies in FNAITP

*AlloAb develop without clinical symptoms during pregnancy*

## Antenatal



- Screening programs:
  - to identify HPA-1a-negative, *HLA DRB3\*01:01* positive women;
  - to test for HPA-1a Ab in order to identify high risk pregnancies
- Timely Treatment: IVIg administration



**HLA-DRB3\*01:01** is strongly associated with HPA-1a alloimmunization;  
**HLA-DR-DQ** haplotype association with HPA-1a alloimmunization

# Management strategies in FNAITP

## Postnatal



- HPA typing
- Abs Identification
- Prophylactic platelet transfusion (random PLTs or HPA-matched PLTs)

Lancet Haematol 2022; 9: e844–53

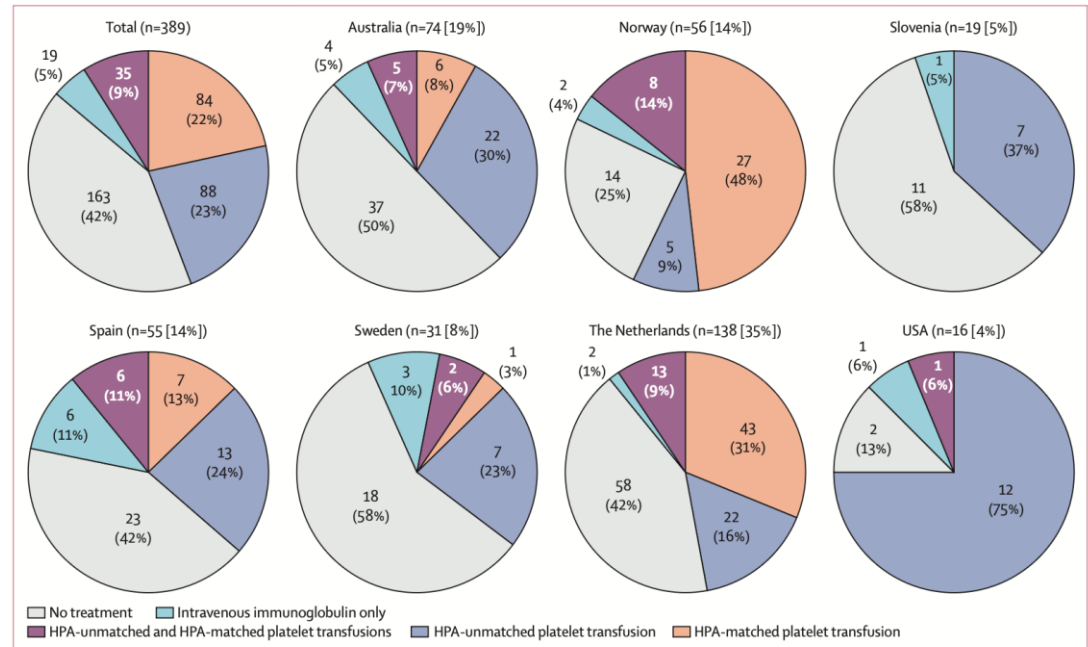


Figure 1: Postnatal treatment strategies by country



Case report

Ahead-of-Print

## Neonatal alloimmune thrombocytopenia due to anti-HPA-1b and anti-HLA antibodies: diagnostic and transfusion management of a clinical case

[Donatella Londero](#) , [Chiara Sindici](#) , [Sonia Merluzzi](#) , [Egle Bertozzo](#), [Giovanni Barillari](#) 

Key words: Fetal and Neonatal Alloimmune Thrombocytopenia, Anti-HPA/HLA antibody screening, transfusion management, breast milk

DOI: [10.2450/BloodTransfus.1131](https://doi.org/10.2450/BloodTransfus.1131)

[Immunohematology](#).

Publication Date: 2025-10-02

★ *the importance of correct diagnosis and intervention in a real-world immunohematology laboratory*



# Case Report

- A full-term female neonate was born at 39 wg+6, in the absence of infectious context
- Apgar scores were 9/10
- No history of maternal autoimmune or hematological disease was recorded
- Within 24 hours of life, a severe thrombocytopenia was discovered on neonate blood cell count (PLT  $8 \times 10^3/\mu\text{l}$ )

**A NAITP was suspected due to the severity and early onset of the thrombocytopenia**

# How I diagnose and treat neonatal thrombocytopenia

Simon J. Stanworth<sup>1-3</sup> and Andrew D. Mumford<sup>4</sup>

 **blood**<sup>®</sup> 1 JUNE 2023 | VOLUME 141, NUMBER 22

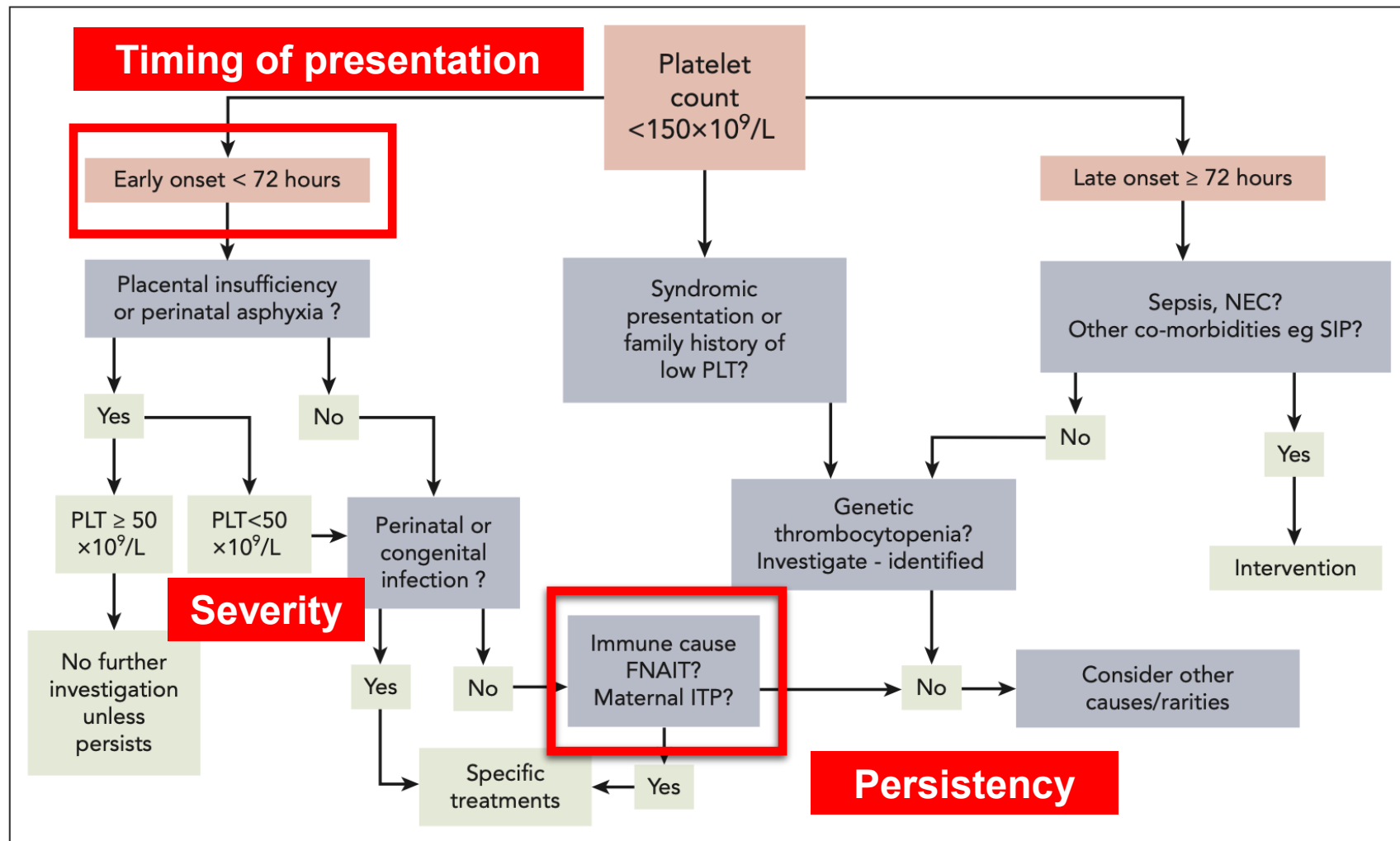


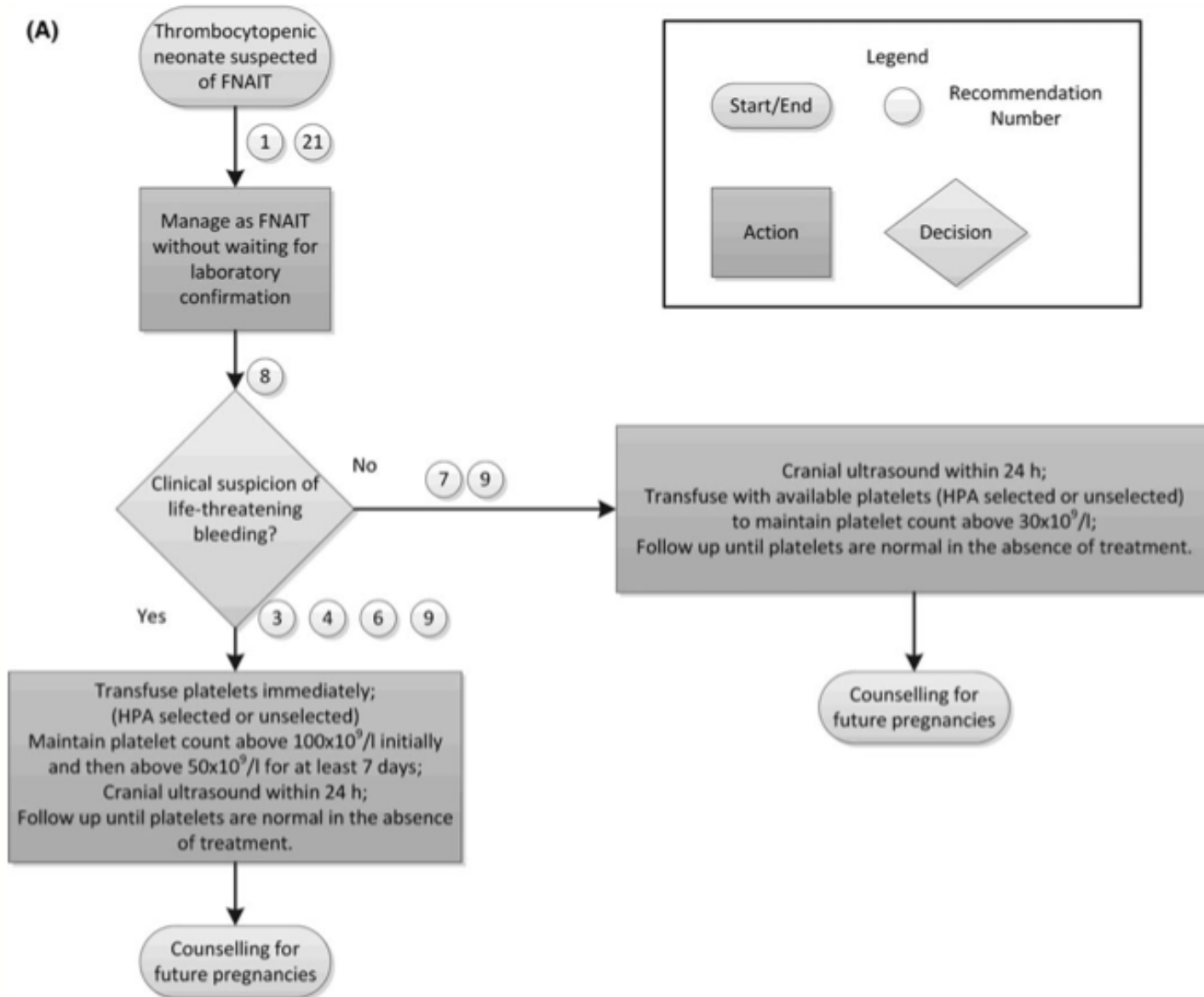
**Figure 1. Clinical decision-making aid for treatment of neonates with platelet counts  $<150 \times 10^9/L$ .** ITP, immune thrombocytopenic purpura; PLT, platelet count; SIP, spontaneous intestinal perforation.

Fetal and neonatal alloimmune thrombocytopenia:  
recommendations for evidence-based practice, an international  
approach      L. Lieberman et al. *BJH*, 2019: 185; 549-562.

## Postnatal

1. If there is clinical suspicion of FNAIT, manage as FNAIT **without waiting for laboratory confirmation** (moderate evidence, strong recommendation).
2. If a platelet transfusion is indicated, HPA-selected platelets should be used if immediately available (moderate evidence, strong recommendation).
3. If HPA-selected platelets are not immediately available, **HPA unselected platelets should be transfused** (moderate evidence, strong recommendation).

# Postnatal Algorithm in FNAITP





- **First line treatment:** administration of two doses of IVIG (1g/kg) and transfusion of two units of random single-donor platelets, administered over 14 hours. The post-transfusion platelet count was  $265 \times 10^3/\mu\text{l}$ .
- **First line screening:** Anti-HPA screening on mother's sample (ELISA PAKPlus) and HPA/HLA typing on mother, father, newborn samples



|   |                |                                  |     |
|---|----------------|----------------------------------|-----|
| A | GP<br>IIb/IIIa | HPA-1a/1a<br>HPA-3a/3a<br>HPA-4a | NEG |
| B |                | HPA-1b/1b<br>HPA-3b/3b<br>HPA-4a | NEG |
| C | GP Ia/IIa      | HPA-5b/5b                        | NEG |
| D |                | HPA-5b/5b                        | NEG |
| E | GPIb/IX        |                                  | NEG |
| F | GPIV           |                                  | NEG |
| G | HLA            |                                  | NEG |
| H | Blank          |                                  | /   |

**ELISA (PakPlus)**  
Anti-HPA negative screening  
+  
**Platelet increment**  
↓  
**Favorable Outcome?**

# HPA-HLA Typing



| HPA    | Mother           | Father            | Neonate                 |
|--------|------------------|-------------------|-------------------------|
| HPA-1  | <b>aa</b>        | <b>bb</b>         | <b>ab</b>               |
| HPA-2  | aa               | aa                | aa                      |
| HPA-3  | aa               | ab                | aa                      |
| HPA-4  | aa               | aa                | aa                      |
| HPA-5  | aa               | aa                | aa                      |
| HPA-6  | aa               | aa                | aa                      |
| HPA-9  | aa               | ab                | aa                      |
| HPA-15 | ab               | bb                | ab                      |
| HLA    | Mother           | Father            | Neonate                 |
| HLA-A  | *02:01           | *29:01<br>*66:01  | *02:01<br><b>*66:01</b> |
| HLA-B  | *08:01<br>*39:24 | *18:01,<br>*41:02 | *08:01<br><b>*41:02</b> |



- **Screening results:** HPA incompatibility and HLA mismatches; positive cross-match mother/father
- **Clinical symptoms:** platelet drop and the onset of gastrointestinal bleeding

## Further laboratory investigations and Increased transfusion support

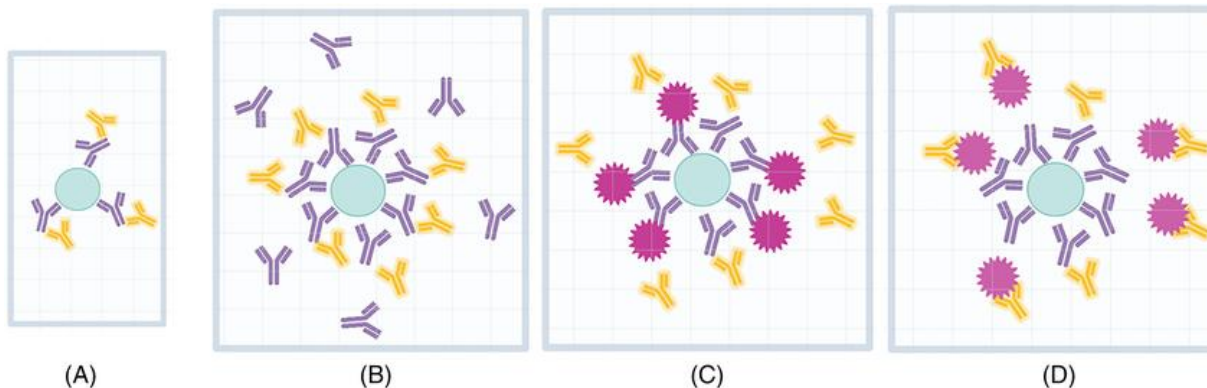
- **Platelet Crossmatch** (SPRCA)  
between mother's serum and Single-donor apheresis or Buffy-Coat platelets were performed to obtain a platelet transfusion threshold of  $50 \times 10^3/\mu\text{l}$ .



# Further Tests



- **Single Antigen Bead Assay (SAB):** detection and identification of HLA class I antibodies including antibody strength, measured by mean fluorescence intensity values (MFI)
- **Luminex platform-driven microsphere-based multiplex assays (PakLx):** detection and identification of IgG antibodies to HPA-1, HPA-2, HPA-3, HPA-4, HPA-5, and GPIV and detection of HLA Class I antibodies



# PakLx-Result



| PAK Lx SAMPLE ANALYSIS AND RESULTS                                                                     |                    |                  |                 | Batch Name: M081224A |                  | Assay Date: 08.12.24     |                  |                 |     |
|--------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------|----------------------|------------------|--------------------------|------------------|-----------------|-----|
| PAK Lx Kit Lot #: 3014621-PLX                                                                          |                    |                  | Assay Tech:     |                      |                  | Analysis Date: 8/12/2024 |                  |                 |     |
| SAMPLE ID: 2024/1739                                                                                   |                    |                  | Antibody Target | GPIV                 | HLA              | GPIIbIIIa (HPA-1,-3,-4)  | GPIbIX (HPA-2)   | GPIaIIa (HPA-5) |     |
| Patient Name: 2024/1739                                                                                |                    |                  |                 |                      |                  |                          |                  |                 |     |
| Minimum Cutoff (MC). If the MFI of the Con beads is < MC, the Adjusted Ratios are calculated using MC. |                    |                  | 109             | Result               | Neg              | Pos                      | Reactive         | Neg             | Neg |
| Bead Region                                                                                            | Glycoprotein Group | Antigen          | MFI             | Bead Reactivity      | Adjusted Ratio 1 | Adjusted Ratio 2         | Adjusted Ratio 3 |                 |     |
| 13                                                                                                     | Con1               | Con1             | 145             |                      |                  |                          |                  |                 |     |
| 14                                                                                                     | Con2               | Con2             | 113             |                      |                  |                          |                  |                 |     |
| 18                                                                                                     | Con3               | Con3             | 135             |                      |                  |                          |                  |                 |     |
| 11                                                                                                     | POS                | POS              | 21244           |                      |                  |                          |                  |                 |     |
| 6                                                                                                      | GPIV               | GPIV             | 118             | Negative             | -2.22            | -2.49                    | -1.98            |                 |     |
| 10                                                                                                     | HLA Class I        | HLA Class I      | 2031            | Positive             | 10.22            | 13.88                    | 11.63            |                 |     |
| 21                                                                                                     | GPIIb-IIIa         | HPA - 1a-3a-4a   | 156             | Negative             | -3.63            | -3.98                    | -3.26            |                 |     |
| 22                                                                                                     | GPIIb-IIIa         | HPA - 1a-3b-4a   | 143             | Negative             | -3.68            | -3.55                    | -2.93            |                 |     |
| 23                                                                                                     | GPIIb-IIIa         | HPA - 1b-3a-4a   | 1581            | Positive             | 6.62             | 9.62                     | 7.91             |                 |     |
| 24                                                                                                     | GPIIb-IIIa         | HPA - 1b-3b-4a   | 1947            | Positive             | 8.48             | 11.91                    | 9.98             |                 |     |
| 25                                                                                                     | GPIIb-IIIa         | HPA - 1ab-3ab-4a | 383             | Negative             | -2.65            | -2.26                    | -1.84            |                 |     |
| 26                                                                                                     | GPIIb-IIIa         | HPA - 1a-3ab-4b  | 181             | Negative             | -4.27            | -4.17                    | -3.53            |                 |     |
| 27                                                                                                     | GPIb/IX            | HPA - 2a         | 120             | Negative             | -2.86            | -2.74                    | -2.34            |                 |     |
| 28                                                                                                     | GPIb/IX            | HPA - 2a         | 102             | Negative             | -2.96            | -3.21                    | -2.77            |                 |     |
| 29                                                                                                     | GPIb/IX            | HPA - 2ab        | 106             | Negative             | -2.84            | -2.93                    | -2.6             |                 |     |
| 30                                                                                                     | GPIb/IX            | HPA - 2b         | 120             | Negative             | -2.52            | -2.75                    | -2.21            |                 |     |
| 32                                                                                                     | GPIb/IX            | HPA - 2b         | 86              | Negative             | -2.85            | -2.96                    | -2.46            |                 |     |
| 33                                                                                                     | GPIa-IIa           | HPA - 5a         | 211             | Negative             | -2.92            | -3.38                    | -2.83            |                 |     |
| 42                                                                                                     | GPIa-IIa           | HPA - 5a         | 207             | Negative             | -3.7             | -3.83                    | -3.34            |                 |     |
| 48                                                                                                     | GPIa-IIa           | HPA - 5ab        | 150             | Negative             | -3.48            | -3.73                    | -3.06            |                 |     |
| 51                                                                                                     | GPIa-IIa           | HPA - 5b         | 160             | Negative             | -3.38            | -3.79                    | -3.07            |                 |     |
| 54                                                                                                     | GPIa-IIa           | HPA - 5b         | 184             | Negative             | -3.33            | -3.56                    | -3.12            |                 |     |

Ab

Ab

**Ab anti-HPA-1b**  
**Ab anti-HLA Class I**



# Single Antigen LabScreen-Result



Saved By: LONDERO,DONATELLA

Date: ago 5, 2024

NS Sample: NS027

Confirmed By:

Date:

Test Type Single Class I

Comment:

## Test Results

|                      | Class I | Class II | MIC |
|----------------------|---------|----------|-----|
| Overall (Pos/Neg):   | -       | -        | -   |
| %PRA - or - %SA:     | 28      | -        | -   |
| Antibody Assignment: | -       | -        | -   |

## Test Configuration

|         | Threshold | %SA8 | %SA6 | %SA4 | %SA2 | PC    | NC | PC/NC   | Formula  | Level | Excluded Ag | Min #Bead |
|---------|-----------|------|------|------|------|-------|----|---------|----------|-------|-------------|-----------|
| Class I | X2        | 11   | 18   | 20   | 28   | 13902 | 78 | 177.595 | BaseLine | Sero  | -           | 100       |

## Test Details

| Bead | Rxn | Raw      | SFI Raw | Normal   | SFI Normal | Cnt | Specificity | Allele Specificity |
|------|-----|----------|---------|----------|------------|-----|-------------|--------------------|
| 021  | 8   | 14150,24 |         | 14043,15 |            | 100 | A32         | A*32:01            |
| 013  | 8   | 13794,32 |         | 12601,82 |            | 125 | A25         | A*25:01            |
| 027  | 8   | 12632,21 |         | 12456,87 |            | 119 | A66         | A*66:01            |
| 014  | 8   | 10474,08 |         | 10351    |            | 111 | A26         | A*26:01            |
| 053  | 8   | 7474,81  |         | 7308,14  |            | 109 | B60, Bw6    | B*40:01            |
| 058  | 8   | 7016,55  |         | 6886,9   |            | 131 | B44, Bw4    | B*44:03            |
| 060  | 8   | 6986     |         | 6852,22  |            | 139 | B49, Bw4    | B*49:01            |
| 054  | 8   | 6745,37  |         | 6615,8   |            | 121 | B61, Bw6    | B*40:02            |
| 055  | 8   | 6628,29  |         | 6456,87  |            | 112 | B41, Bw6    | B*41:01            |
| 057  | 8   | 6344,28  |         | 6203,65  |            | 113 | B44, Bw4    | B*44:02            |
| 036  | 8   | 6278,29  |         | 6164,44  |            | 146 | B13, Bw4    | B*13:02            |
| 059  | 6   | 5809,15  |         | 5669,91  |            | 114 | B45, Bw6    | B*45:01            |
| 064  | 6   | 5814,89  |         | 5655,61  |            | 145 | B50, Bw6    | B*50:01            |
| 099  | 6   | 5714,41  |         | 5576,29  |            | 135 | B61, Bw6    | B*40:06            |
| 028  | 6   | 4697,42  |         | 4484,82  |            | 116 | A66         | A*66:02            |
| 061  | 6   | 4530,14  |         | 4375,28  |            | 104 | B47, Bw4    | B*47:01            |
| 097  | 6   | 4274,16  |         | 4161,01  |            | 143 | B13, Bw4    | B*13:01            |
| 026  | 4   | 3282,42  |         | 3122,31  |            | 111 | A43         | A*43:01            |
| 023  | 4   | 2183,52  |         | 2001,61  |            | 130 | A34         | A*34:01            |
| 100  | 2   | 1900,56  |         | 1781,16  |            | 136 | A33         | A*33:03            |
| 024  | 2   | 1909,06  |         | 1771,92  |            | 124 | A34         | A*34:02            |
| 009  | 2   | 1342,16  |         | 1154,72  |            | 132 | A11         | A*11:02            |
| 008  | 2   | 1209,8   |         | 1121,94  |            | 135 | A11         | A*11:01            |
| 032  | 2   | 1210,78  |         | 1113,57  |            | 135 | A74         | A*74:01            |
| 022  | 2   | 1208,14  |         | 1065,09  |            | 112 | A33         | A*33:01            |

PRA=28%

Ab anti-A\*66:01 (MM)  
(MFI=12456)



# Laboratory confirmation of FNAITP

| Testing           | Method       | Sample | Results                         |
|-------------------|--------------|--------|---------------------------------|
| Anti-HPA+anti-HLA | ELISA        | Mother | <b>Negative</b>                 |
| Anti-HPA+anti-HLA | LX           | Mother | Positive: anti-HPA-1b +anti-HLA |
| Anti-HLA          | LS           | Mother | Positive (28% PRA)              |
| HPA Genotyping    | Realtime PCR | Mother | HPA-1aa                         |
|                   |              | Father | HPA-1bb                         |
|                   |              | Infant | <u>HPA-1ab</u>                  |
| HLA Genotyping    | NGS          | Mother | HLA-A*02:01                     |
|                   |              | Father | HLA-A*29:01, *66:01             |
|                   |              | Infant | HLA-A*02:01, <u>*66:01</u>      |

**HPA/HLA matched units**

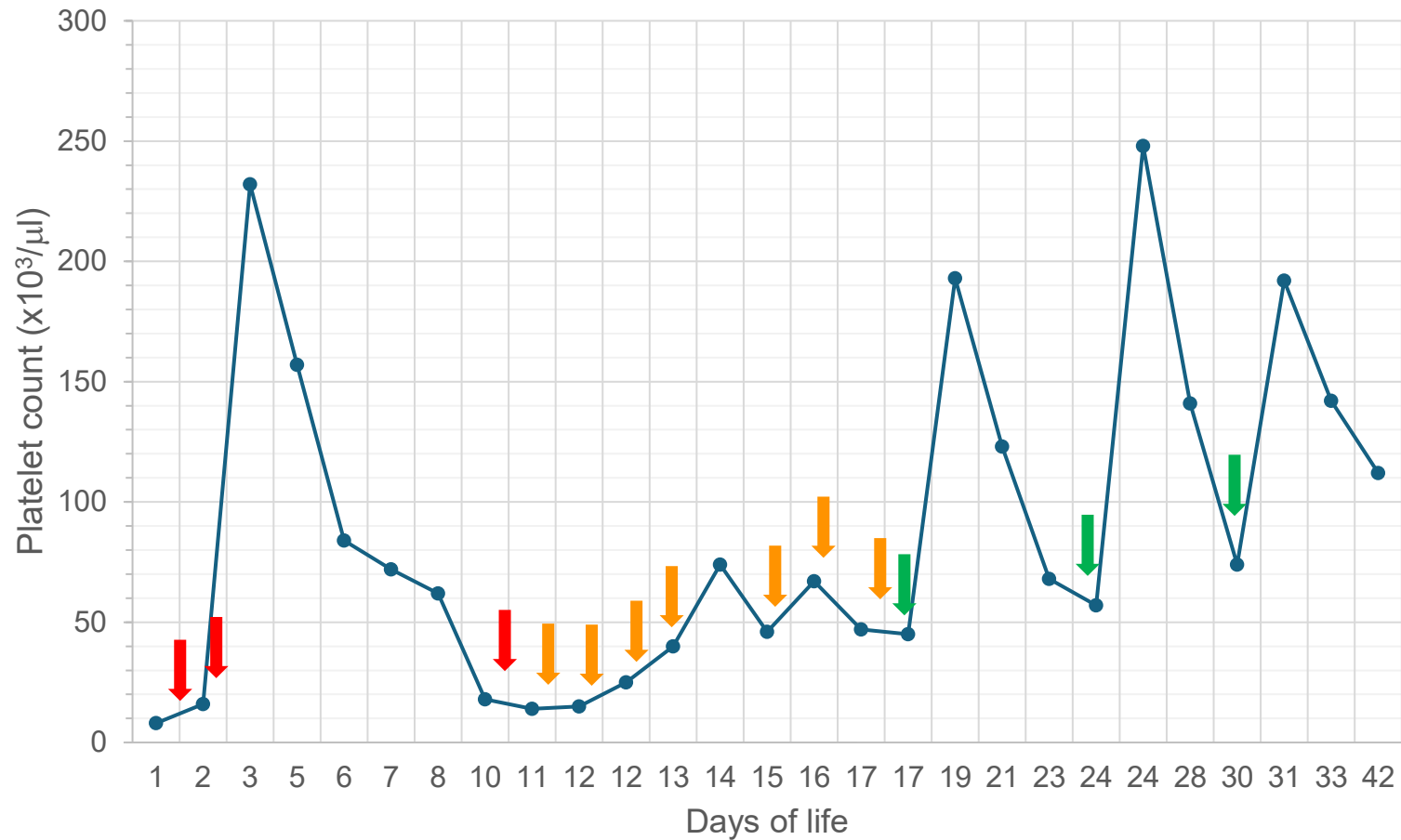
# Diagnostic Problems

**Assay sensitivity:** PakPlus ELISA kit/Pak Lx

| Days from birth | Pak Plus ELISA                    | Pak Lx (Luminex)          |
|-----------------|-----------------------------------|---------------------------|
| +2              | Negative                          | <b>Positive (HPA-1b)</b>  |
| +9              | Negative                          | Positive<br>(HPA-1b,HLA)  |
| +15             | Negative                          | /                         |
| +30             | <b>Positive<br/>(HPA-1b, HLA)</b> | Positive<br>(HPA-1b, HLA) |

- Different diagnostic methods
- Include maternal-paternal platelet cross-matching

# Platelet dynamics



➡ **Random - PLT**

➡ **Xmatched PLT**

➡ **HPA/HLA matched PLT** (higher PLT increments and longer duration of response)

# Clinical Problems

- Prolonged thrombocytopenia
- Persistent gastrointestinal bleeding
- Persistent antibodies

**Suspicious of another source of prolonged  
allo-antibodies exposure = Breast Milk**

Breast milk induced immune haemolytic disease of newborn due to anti-c:  
A case report

*Transfusion and Apheresis Science 63 (2024) 103974*

Aarushi Sahni<sup>a</sup>, Vasanthakumar Karumannan<sup>a</sup>, Lakhvinder Singh<sup>a,\*</sup>, Richa Jain<sup>b</sup>,  
Ratti Ram Sharma<sup>a</sup>



Immunohematologic aspects of alloimmunization and alloantibody  
detection: A focus on pregnancy and hemolytic disease of the fetus  
and newborn

*Transfusion and Apheresis Science 59 (2020) 102946*

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# Take Home Message

**FNAITP** is a severe disease and rapid diagnosis and clinical management are crucial in reducing risks and avoid bad outcome



**In postnatal setting**, the availability of a range of technologies together with an efficient blood bank allow to achieve the best results in terms of diagnosis, care and treatment.

**Future directions**, beside prevention strategies, should be to improve diagnostic testing, to use them as patient-oriented tools and to recognize the possibility of new biological sources to be analyzed (breast milk) to amplify our knowledge and therapeutic interventions.



*Thank you for your attention*