UK NEQAS Histocompatibility & Immunogenetics

# UK NEQAS H&I

## Educational Scheme (iED) Scenario 3: Platelet/Transfusion Scenario Feedback

@UKneqasHI
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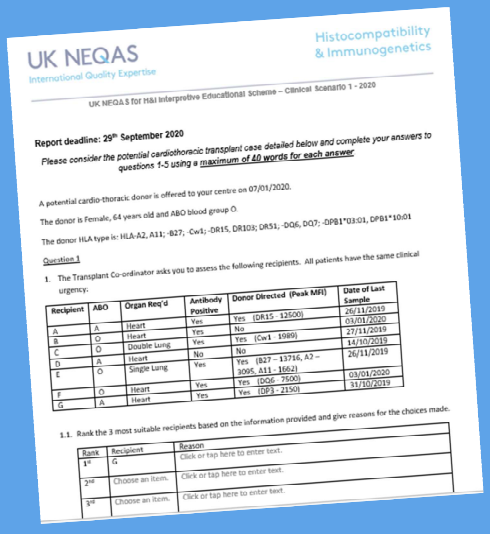
## Our iED Schemes



UK NEQAS
International Quality Expertise
Histocompatibility & Immunogenetics

UK NEQAS for H&I Interpretive Educational Scheme – Clinical Scenario 1 - 2020

**Report deadline: 29th September 2020**

*Please consider the potential cardiothoracic transplant case detailed below and complete your answers to questions 1-5 using a maximum of 40 words for each answer*

A potential cardio-thoracic donor is offered to your centre on 07/01/2020.

The donor is Female, 64 years old and ABO blood group O.

The donor HLA type is: HLA-A2, A11; -B27; -Cw1; -DR15, DR103; DR51; -DQ6, DQ7; -DPB1*03:01, DPB1*10:01

Question 1

1. The Transplant Co-ordinator asks you to assess the following recipients. All patients have the same clinical urgency.

| Recipient | ABO | Organ Req'd | Antibody Positive | Donor Directed (Peak MFI) | Date of Last Sample |
|---|---|---|---|---|---|
| A | A | Heart | Yes | Yes (DR15 - 12500) | 26/11/2019 |
| B | O | Heart | Yes | No | 03/01/2020 |
| C | O | Double Lung | Yes | Yes (Cw1 - 1089) | 27/11/2019 |
| D | A | Heart | No | No | 14/10/2019 |
| E | O | Single Lung | Yes | Yes (B27 - 13716, A2 - 3095, A11 - 1662) | 26/11/2019 |
| F | O | Heart | Yes | Yes (DQ6 - 7500) | 03/01/2020 |
| G | A | Heart | Yes | Yes (DP3 - 2150) | 31/10/2019 |

1.1. Rank the 3 most suitable recipients based on the information provided and give reasons for the choices made.

| Rank | Recipient | Reason |
|---|---|---|
| 1st | G | Click or tap here to enter text. |
| 2nd | Choose an item. | Click or tap here to enter text. |
| 3rd | Choose an item. | Click or tap here to enter text. |

- 3 clinical scenarios a year
  - Solid organ, HSCT, platelet/transfusion
- Based on patient cases
  - Provide relevant clinical details and test results
  - Questions on interpretation of results and clinical advice
- Not assessed
- Provided free of charge

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# iED3 Scenarios

| Year | Transfusion/Platelet | Returns |
|---|---|---|
| 2015 | Matched platelet selection | 27 |
| 2016 | Platelet Refractoriness | 23 |
| 2017 | TRALI | 27 |
| 2018 | NAIT | 24 |
| 2019 | Platelet Refractoriness then HSCT | 37 |
| 2020 | TRALI | 33 |

- Dispatched on 11th January 2022
- 36 Responses
  - 15 from UK and Ireland (UK&I)
  - 21 from the Rest of the World (RoW)

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# Case History

A 59-year old female with a history of pregnancy was previously diagnosed in May 2017 with Myelodysplastic Syndrome (MDS) which transformed to Acute Myeloid Leukaemia (AML) in November 2019. The patient was started on induction chemotherapy using a combination of Daunorubicin and Ara-C.

The patient was admitted to hospital with a fever and beginning on the 13/06/2020, the patient received three fresh ABO compatible random pooled platelets, but the platelet count failed to increment above $10x10^9/L$.

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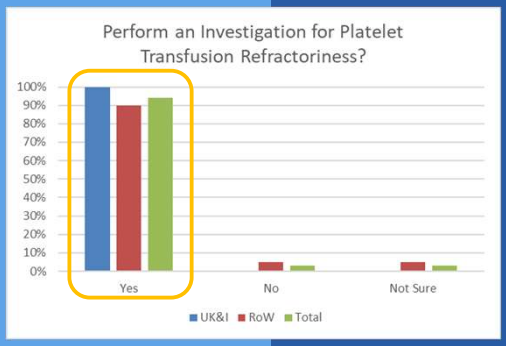
# Q1: Would you investigate for refractoriness?

YES 94%

Unsure 3%

NO 3%

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# Q1: Explain your decision

| Investigate | Explanation | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|---|
| | | Number | % | Number | % | Number | % |
| Yes | Failure to increment after multiple transfusions with ABO matched pooled platelets. | 15 | **100** | 15 | **79** | 30 | **88** |
| | Non-immune causes present e.g. fever. | 7 | **47** | 6 | **32** | 13 | **38** |
| | History of pregnancy. | 5 | **33** | 7 | **37** | 12 | **35** |
| | Patient has MDS and is receiving chemotherapy. | 5 | **33** | 4 | **21** | 9 | **26** |
| No | Non-immune causes present. Initial increment monitoring prior to further investigation. | 0 | **0** | 1 | **100** | 1 | **100** |
| Not Sure | Exclude non-immune factors. | 0 | **0** | 1 | **100** | 1 | **100** |

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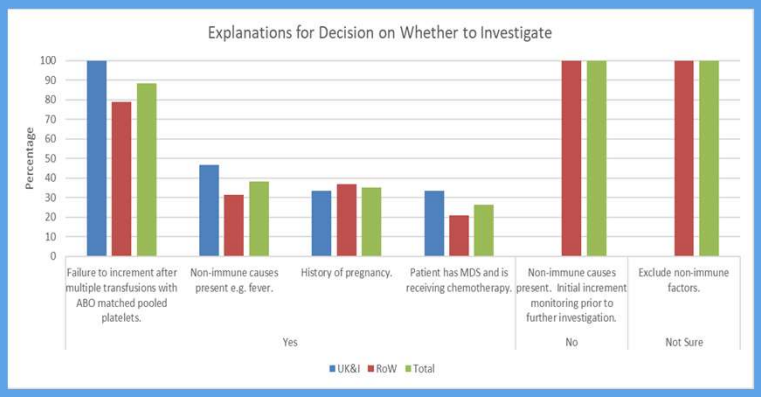
# Q1: Explain your decision




**Comments:**
We would suggest an investigation for platelet transfusion refractoriness would be warranted as the patient has failed to increment when ABO compatible random pooled platelets were transfused on more than two occasions. The patient also has a history of pregnancy.

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# Further information

The patient was HLA typed and screened for Class I HLA antibodies using a LabScreen single antigen bead kit:

| Antigen Specificity | MFI Value |
|---|---|
| **A3** | 2686 |
| **A31** | 1272 |
| **A34** | 1147-1275 |
| **A74** | 1082 |
| **A68** | 1075-1352 |
| **A30** | 1060-1232 |
| **A11** | 5000-5356 |

HLA class I type: A*01, -; B*08, B*41; C*07, C*17
Blood Group: O Rh positive
CMV Status: Negative

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# Q2: Select two donors

| Donor ID | UK&I Number | UK&I % | RoW Number | RoW % | Total Number | Total % | Reasons for Selection |
|---|---|---|---|---|---|---|---|
| **6** | 14 | **93** | 9 | **43** | 23 | **64** | **No donor specific antibodies.<br>HLA matched at A and B.<br>CMV match.<br>ABO incompatible.** |
| **15** | 12 | **80** | 11 | **52** | 23 | **64** | **No donor specific antibodies. Single antigen mismatch.<br>ABO match.<br>CMV mismatch.<br>A23 mm low frequency.** |
| **8** | 4 | **27** | 18 | **86** | 22 | **61** | **No donor specific antibodies.<br>Single antigen mismatch.<br>ABO match.<br>CMV match.<br>A2 mm may cause sensitisation and limit further matches.** |
| **18** | 2 | **13** | 2 | **10** | 4 | **11** | **Low level donor specific antibody to A30.<br>Single antigen mismatch.<br>ABO match.<br>CMV match.<br>A30 mm low frequency.** |
| **4** | 0 | **0** | 1 | **5** | 1 | **3** | **ABO compatible.<br>HLA antigen donor to avoid patient antibody.** |
| **11** | 0 | **0** | 1 | **5** | 1 | **3** | **ABO match. CMV status is not taken into account.<br>Avoidance of antigens with positive MFI and A2 typing in the platelet unit.** |

| Donor | HLA Type A | A | B | B | C | C | ABO | Rh | CMV |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | *2* | *7* | | 7 | | *B* | Positive | *Positive* |
| 2 | *2* | *25* | *18* | *62* | 7 | *9* | O | Positive | *Positive* |
| 3 | *2* | *31* | *7* | *60* | 7 | *10* | O | *Negative* | *Positive* |
| 4 | 1 | *2* | 8 | *44* | 7 | *5* | O | Positive | *Positive* |
| 5 | 1 | *3* | *7* | | 7 | | *A* | Positive | *Positive* |
| 6 | 1 | | 8 | | 7 | | *A* | *Negative* | Negative |
| 7 | 1 | *11* | *35* | *55* | *4* | *9* | *A* | Positive | *Positive* |
| 8 | 1 | *2* | 8 | | 7 | | O | Positive | Negative |
| 9 | 1 | *31* | 8 | *60* | 7 | *10* | *B* | *Negative* | *Positive* |
| 10 | *24* | | *7* | | 7 | | *A* | *Negative* | *Positive* |
| 11 | *24* | *26* | *38* | *55* | *12* | *9* | O | Positive | *Positive* |
| 12 | *2* | *3* | *7* | *27* | *2* | *7* | O | Positive | *Positive* |
| 13 | *3* | *30* | *7* | *13* | *6* | *7* | *A* | Positive | *Positive* |
| 14 | *30* | *32* | *50* | *62* | *6* | *9* | *A* | Positive | *Positive* |
| 15 | 1 | *23* | 8 | | 7 | | O | Positive | *Positive* |
| 16 | *2* | *68* | *7* | *60* | 7 | *10* | O | *Negative* | *Positive* |
| 17 | 1 | *11* | 8 | *35* | *4* | *7* | O | Positive | *Positive* |
| 18 | 1 | *30* | 8 | | *8* | | O | Positive | Negative |
| 19 | *2* | *29* | *44* | | *5* | | *A* | Positive | *Positive* |
| 20 | *3* | | *7* | | 7 | | O | Positive | *Positive* |

**Mismatches have been highlighted in red italic. Antigens to which the patient has antibodies have been highlighted in yellow.*

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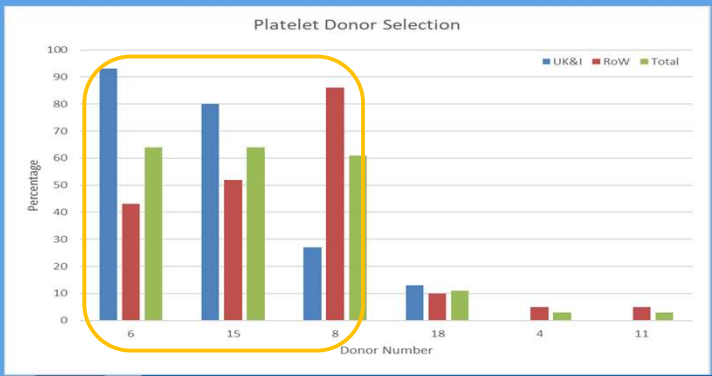
# Q2: Select two donors




| Donor | HLA Type A | A | B | B | C | C | ABO | Rh | CMV |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | *2* | *7* | | 7 | | *B* | Positive | *Positive* |
| 2 | *2* | *25* | *18* | *62* | 7 | *9* | O | Positive | *Positive* |
| 3 | *2* | *31* | *7* | *60* | 7 | *10* | O | *Negative* | *Positive* |
| 4 | 1 | *2* | 8 | *44* | 7 | *5* | O | Positive | *Positive* |
| 5 | 1 | *3* | *7* | | 7 | | *A* | Positive | *Positive* |
| 6 | 1 | | 8 | | 7 | | *A* | *Negative* | Negative |
| 7 | 1 | *11* | *35* | *55* | *4* | *9* | *A* | Positive | *Positive* |
| 8 | 1 | *2* | 8 | | 7 | | O | Positive | Negative |
| 9 | 1 | *31* | 8 | *60* | 7 | *10* | *B* | *Negative* | *Positive* |
| 10 | *24* | | *7* | | 7 | | *A* | *Negative* | *Positive* |
| 11 | *24* | *26* | *38* | *55* | *12* | *9* | O | Positive | *Positive* |
| 12 | *2* | *3* | *7* | *27* | *2* | *7* | O | Positive | *Positive* |
| 13 | *3* | *30* | *7* | *13* | *6* | *7* | *A* | Positive | *Positive* |
| 14 | *30* | *32* | *50* | *62* | *6* | *9* | *A* | Positive | *Positive* |
| 15 | 1 | *23* | 8 | | 7 | | O | Positive | *Positive* |
| 16 | *2* | *68* | *7* | *60* | 7 | *10* | O | *Negative* | *Positive* |
| 17 | 1 | *11* | 8 | *35* | *4* | *7* | O | Positive | *Positive* |
| 18 | 1 | *30* | 8 | | *8* | | O | Positive | Negative |
| 19 | *2* | *29* | *44* | | *5* | | *A* | Positive | *Positive* |
| 20 | *3* | | *7* | | 7 | | O | Positive | *Positive* |

*ed italic. Antigens to een highlighted in yellow.*

**Comments:**
The patient has a number of HLA specific antibodies defined. Taking these and the patient's HLA type and ABO group into consideration Donor 6 (no donor-directed antibodies, no HLA mismatches) and 15 (no donor-directed antibodies, one low frequency HLA antigen mismatch, ABO match) would be preferentially selected. CMV negative products are not indicated for this patient and have not been requested.

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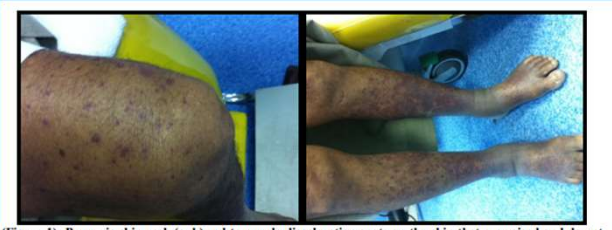
# Further information

Following the transfusion of two ABO compatible HLA matched (no HLA-A, B or Cw mismatches) platelets 7 days earlier, and with a platelet count of $2x10^9$/L, the patient presented with a retinal haematoma, bleeding in the lungs with haemoptysis, bleeding round the knee joint and purpura.

These symptoms could indicate Post Transfusion Purpura (PTP)



(Figure 1): Purpuric skin rash (a, b) red to purple discoloration spots on the skin that are raised and do not blanch on applying pressure.

Albalawi, M. et al. Current Understanding of Post Transfusion Purpura: A Systematic Review. Journal of American Science 2015;11(10)

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# Q3: What factors support a diagnosis of PTP?

| | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| **Factors Supporting Diagnosis** | **Number** | **%** | **Number** | **%** | **Number** | **%** |
| **Thrombocytopenic despite HLA and ABO matched platelets** | 11 | **73** | 18 | **86** | 29 | **81** |
| **Time of symptom onset** | 12 | **80** | 15 | **71** | 27 | **75** |
| **Bleeding/purpura/haematoma** | 10 | **67** | 13 | **62** | 23 | **64** |
| **Woman with history of pregnancy** | 13 | **87** | 6 | **29** | 19 | **53** |
| **Previous transfusions** | 4 | **27** | 0 | **0** | 4 | **11** |
| **HPA antibody suspected** | 0 | **0** | 2 | **10** | 2 | **6** |
| **Already has HLA antibodies** | 0 | **0** | 1 | **5** | 1 | **3** |

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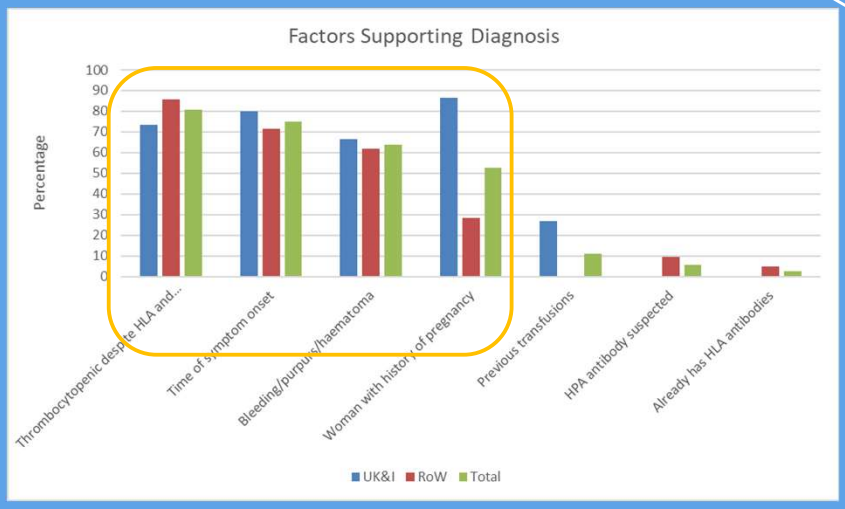
# Q3: What factors support a diagnosis of PTP?




**Comments:**
The factors that support a diagnosis of PTP are the fact the patient is a female with a history of pregnancy, the patient has been transfused within the past 5-10 days and is refractory despite two HLA matched platelet transfusions.

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# Q3: What further testing would you recommend?

| | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| **Further Testing** | **Number** | **%** | **Number** | **%** | **Number** | **%** |
| HPA antibody detection in patient sera | 15 | **100%** | 20 | **95%** | 35 | **97%** |
| HPA genotyping of patient | 15 | **100%** | 10 | **48%** | 25 | **69%** |
| HPA genotyping of platelet donor | 2 | **13%** | 1 | **5%** | 3 | **8%** |
| HPA type father of children | 1 | **7%** | 0 | **0%** | 1 | **3%** |
| Exclude HIT | 0 | **0%** | 1 | **5%** | 1 | **3%** |
| Platelet counts | 0 | **0%** | 1 | **5%** | 1 | **3%** |
| Screen patient for auto-antibodies | 0 | **0%** | 1 | **5%** | 1 | **3%** |
| Retest Patient for HLA antibodies | 0 | **0%** | 1 | **5%** | 1 | **3%** |

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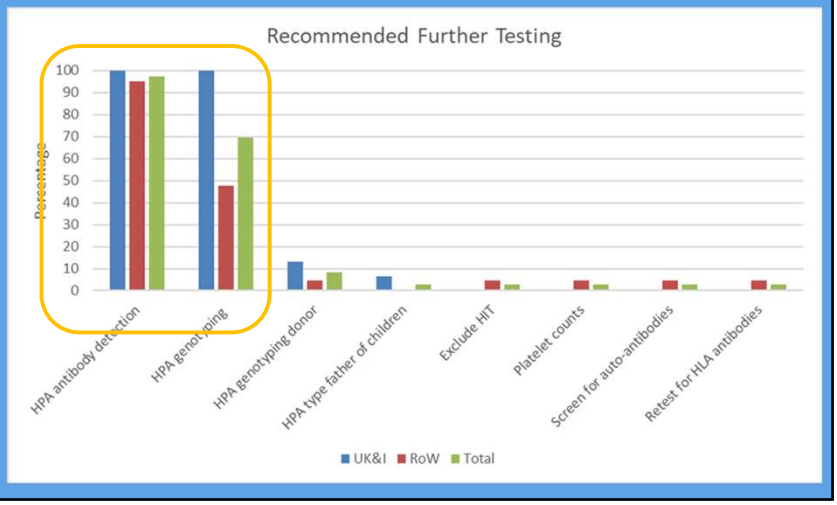
# Q3: What further testing would you recommend?

**Comments:**
Screening the patient for the presence of HPA antibodies and performing HPA genotyping of the patient would be recommended.

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# Further information

The patient's HPA type has been defined as HPA-1b1b, 2a2a, 3a3a, 4a4a, 5a5a, 15a15b
Results from PAK-Lx testing have been provided:

| Bead Region | Glycoprotein Group | Antigen | MFI | Bead Reactivity | Adjusted Ratio 1 | Adjusted Ratio 2 | Adjusted Ratio 3 |
|---|---|---|---|---|---|---|---|
| 13 | Con1 | Con1 | 29 | | | | |
| 14 | Con2 | Con2 | 12 | | | | |
| 18 | Con3 | Con3 | 40 | | | | |
| 11 | POS | POS | 15766 | | | | |
| 6 | GPIV | GPIV | 34 | Negative | -3.06 | -3.77 | -2.66 |
| 10 | HLA Class I | HLA Class I | 20 | Negative | -3.24 | -4.15 | -2.99 |
| 21 | GPIIb-IIIa | [illegible] - 1a 3a 4a | 5745 | Positive | 54.52 | 53.52 | 55.08 |
| 22 | GPIIb-IIIa | [illegible] - 1a 3b 4a | 5048 | Positive | 47.12 | 45.75 | 47.46 |
| 23 | GPIIb-IIIa | HPA - 1b 3a 4a | 97 | Negative | -3.21 | -4.01 | -2.94 |
| 24 | GPIIb-IIIa | [illegible] - 1b 3b 4a | 89 | Negative | -3.32 | -4.19 | -2.97 |
| 25 | GPIIb-IIIa | [illegible] - 1a 3a 3b 4a | 3727 | Positive | 34.33 | 33.29 | 34.72 |
| 26 | GPIIb-IIIa | HPA - 1a 3a 4b | 6953 | Positive | 66.55 | 64.97 | 67.17 |
| 27 | GPIb/IX | HPA - 2a | 59 | Negative | -3.75 | -4.38 | -3.1 |
| 28 | GPIb/IX | HPA - 2a | 44 | Negative | -3.56 | -4.27 | -2.98 |
| 29 | GPIb/IX | HPA - 2ab | 30 | Negative | -3.42 | -3.92 | -2.74 |
| 30 | GPIb/IX | HPA - 2b | 28 | Negative | -3.43 | -4.05 | -2.8 |
| 32 | GPIb/IX | HPA - 2b | 31 | Negative | -3.09 | -3.59 | -2.58 |

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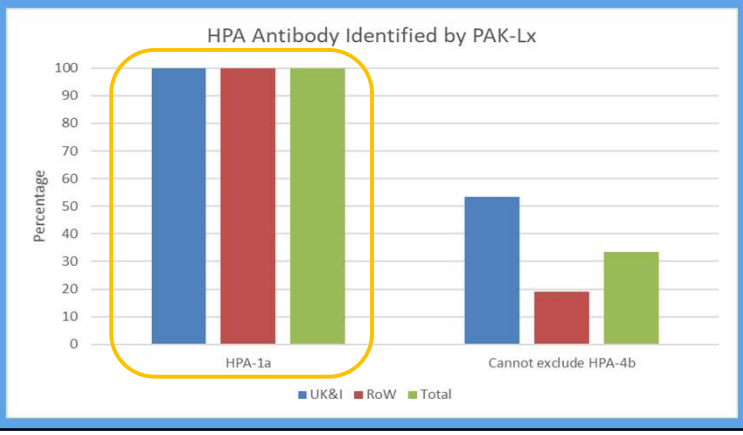
# From the Antibody Reactivity Pattern What HPA Antibody Would be Defined as Present?

| HPA Antibody Detected in PAK-Lx | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| **HPA-1a** | 15 | **100%** | 21 | **100%** | 36 | **100%** |
| **Cannot exclude HPA-4b** | 8 | **53%** | 4 | **19%** | 12 | **33%** |

**Comments:**
The results presented from the PAK-Lx kit suggest the presence of a HPA-1a antibody, although an antibody to HPA-4b cannot be excluded. The patient's type has also been confirmed as HPA-1b1b.

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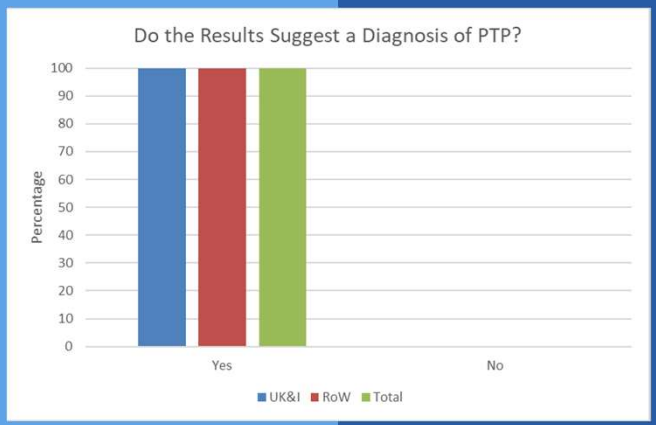
# Are These Results Consistent with a Diagnosis of PTP?

YES

100%




NO

0%

**Comments:**
These results and the clinical presentation of the patient would support a diagnosis of PTP.

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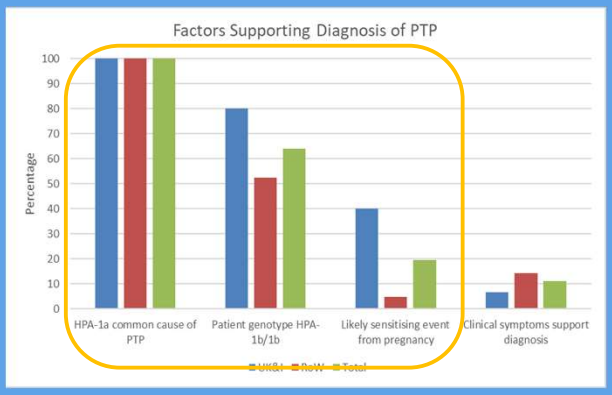
# Give an Explanation for your Answer.

| Factors supporting diagnosis | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | Number | % |
| HPA-1a common cause of PTP | 15 | 100% | 21 | 100% | 36 | 100% |
| Patient genotype HPA-1b/1b | 12 | 80% | 11 | 52% | 23 | 64% |
| Likely sensitising event from pregnancy | 6 | 40% | 1 | 5% | 7 | 19% |
| Clinical symptoms support diagnosis | 1 | 7% | 3 | 14% | 4 | 11% |

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# What Transfusion Support Would You Provide?

The clinician informs you the patient requires platelet and red cell transfusion support through the acute phase of this particular condition.

| | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| Transfusion Support | Number | % | Number | % | Number | % |
| HPA and/or HLA matched platelets | 9 | 60% | 15 | 71% | 24 | 67% |
| Random ABO matched platelets | 7 | 47% | 3 | 14% | 10 | 28% |
| IVIg | 2 | 13% | 6 | 29% | 8 | 22% |
| Washed RBCs | 3 | 20% | 5 | 24% | 8 | 22% |
| HLA and/or HLA matched red cells | 3 | 20% | 3 | 14% | 6 | 17% |
| Standard red cells | 1 | 7% | 3 | 14% | 4 | 11% |
| Irradiated products if patient immunocompromised | 1 | 7% | 0 | 0% | 1 | 3% |
| CMV neg products | 0 | 0% | 1 | 5% | 1 | 3% |
| None | 0 | 0% | 1 | 5% | 1 | 3% |

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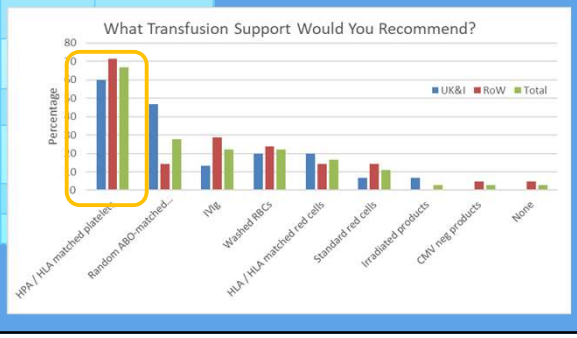
# What Transfusion Support Would You Provide?

The clinician informs you the patient requires platelet and red cell transfusion support through the acute phase of this particular condition.

| | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| **Transfusion Support** | **Number** | **%** | **Number** | **%** | **Number** | **%** |
| **HPA and/or HLA matched platelets** | 9 | **60%** | 15 | **71%** | 24 | **67%** |
| **Random ABO matched platelets** | 7 | **47%** | 3 | **14%** | 10 | **28%** |
| **IVIg** | 2 | **13%** | 6 | **29%** | 8 | **22%** |
| **Washed RBCs** | 3 | **20%** | 5 | **24%** | | |
| **HLA and/or HLA matched red cells** | 3 | **20%** | 3 | **14%** | | |
| **Standard red cells** | 1 | **7%** | 3 | **14%** | | |
| **Irradiated products if patient immunocompromised** | 1 | **7%** | 0 | **0%** | | |
| **CMV neg products** | 0 | **0%** | 1 | **5%** | | |
| **None** | 0 | **0%** | 1 | **5%** | | |

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# Reasons for Recommendation?

| Reasons for Recommendations | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| | **Number** | **%** | **Number** | **%** | **Number** | **%** |
| **Platelet transfusion not recommended to treat PTP** | 6 | **40%** | 6 | **29%** | 12 | **33%** |
| **Patient is refractory and has HLA and HPA antibodies so needs matched products** | 5 | **33%** | 7 | **33%** | 12 | **33%** |
| **Avoid further sensitising patient** | 2 | **13%** | 4 | **19%** | 6 | **17%** |
| **Avoid transfusion in PTP unless bleeding** | 1 | **7%** | 3 | **14%** | 4 | **11%** |
| **IVIg the recommended treatment** | 2 | **13%** | 1 | **5%** | 3 | **8%** |
| **Avoid HPA-1a products in the future to prevent re-occurrence of PTP** | 3 | **20%** | 0 | **0%** | 3 | **8%** |
| **Matched products will maximise platelet increment** | 2 | **13%** | 0 | **0%** | 2 | **6%** |

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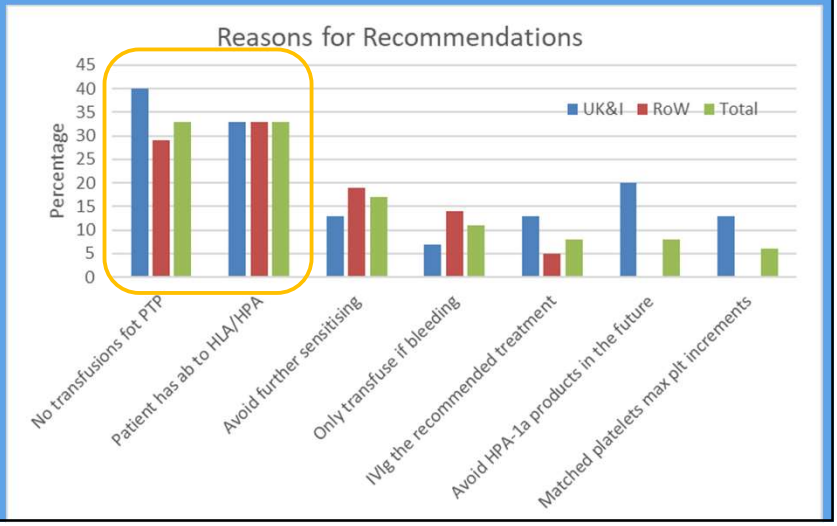
# Reasons for Recommendation?

**Comments:**
In terms of transfusion support for the patient, we would suggest discussing this requirement with the clinician. The BSH Guidelines (Estcourt et al., 2017), recommend treatment with IVIg and random donor platelets reserved to control severe bleeding if required.

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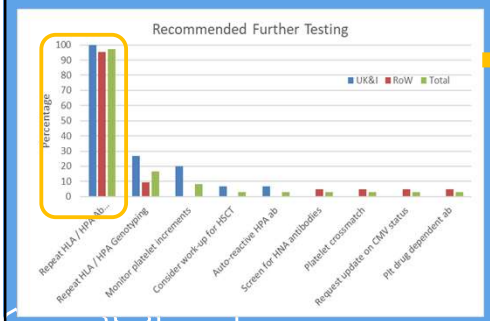
# Q4 What Further Testing Would You Recommend?

In May 2021 the patient relapsed and was given FLAG-IDA and G-CSF, an effective remission-induction therapy for poor prognosis AML. During the treatment the patient required platelet support.




| Further Testing | UK&I % | RoW % | Total % | Common Reasons Given |
|---|---|---|---|---|
| **Repeat HLA / HPA Antibody Monitoring** | 100% | 95% | 97% | HLA/HPA-specific antibodies may change with time and impact efficacy of platelet transfusions.<br>Select matched units to prevent further sensitisation.<br>Recent sensitising events.<br>Potential changes in immunosuppression levels.<br>To inform platelet provision.<br>Patient is homozygous at HLA-B locus and HPA 5b so could form additional anti HLA and HPA 5b antibodies.<br>PTP is self-limiting but there is a recurrence potential so suggest receive a HPA compatible products |
| **Repeat HLA / HPA Genotyping** | 27% | 10% | 17% | If stem cell transplant is being considered, donors should be HPA typed also.<br>Verification HLA types are essential for confirming patient types are correct. |
| **Monitor platelet increments** | 20% | 0% | 8% | To ensure successful increments achieved.<br>Review which units produced best increments. |
| **Consider work-up for HSCT if requested** | 7% | 0% | 3% | |
| **Test for auto-reactive HPA antibodies** | 7% | 0% | 3% | Development of autoreactive anti-platelet antibodies can continue to affect platelet increments. |
| **Screen for HNA antibodies** | 0% | 5% | 3% | The patient may develop new anti-HLA antibodies and anti-HNA after receiving blood products. |
| **Platelet crossmatch** | 0% | 5% | 3% | These findings will help to ensure no new allo-immunisation occurs and help ensure a compatible platelet transfusion |
| **Request update on CMV status** | 0% | 5% | 3% | The patient's CMV status may have changed, and could potentially increase the pool of donors available. |
| **Screen for platelet drug dependent antibodies** | 0% | 5% | 3% | The induction therapy may induce antibodies that cause thrombocytopenia |

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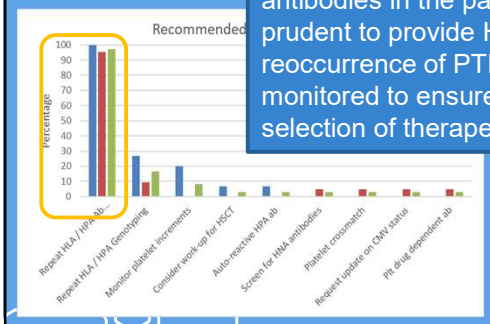
# Q4 What Further Testing Would You Recommend?

In May 2021 the patient relapsed and was given FLAG-IDA and G-CSF, an effective remission-induction therapy for poor prognosis AML. During the treatment the patient required platelet support.




| Further Testing | UK&I % | RoW % | Total % | Common Reasons Given |
|---|---|---|---|---|
| **Repeat HLA / HPA Antibody Monitoring** | 100% | 95% | 97% | HLA/HPA-specific antibodies may change with time and impact efficacy of platelet transfusions.<br>Select matched units to prevent further sensitisation.<br>Recent sensitising events.<br>Potential changes in immunosuppression levels.<br>To inform platelet provision.<br>Patient is homozygous at HLA-B locus and HPA 5b so could form additional anti HLA and HPA 5b antibodies. |
| **Screen for HNA antibodies** | 0% | 5% | 3% | The patient may develop new anti-HLA antibodies and anti-HNA after receiving blood products. |
| **Platelet crossmatch** | 0% | 5% | 3% | These findings will help to ensure no new allo-immunisation occurs and help ensure a compatible platelet transfusion |
| **Request update on CMV status** | 0% | 5% | 3% | The patient's CMV status may have changed, and could potentially increase the pool of donors available. |
| **Screen for platelet drug dependent antibodies** | 0% | 5% | 3% | The induction therapy may induce antibodies that cause thrombocytopenia |

**Comments:**
We would suggest repeating the testing for the presence of HLA and HPA antibodies in the patient prior to receiving platelet support. It would also be prudent to provide HLA/HPA matched platelets for this patient to prevent reoccurrence of PTP. Post transfusion platelet increment data should also be monitored to ensure the effectiveness of products provided and guide the future selection of therapeutic units.

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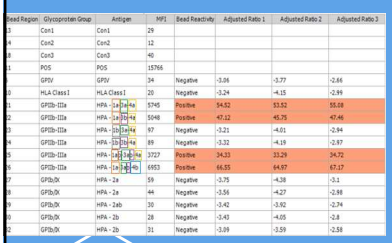
# Further Information

The patient urgently required platelet support, with insufficient time for additional testing.

| Antigen Specificity | MFI Value |
|---|---|
| A3 | 2686 |
| A31 | 1272 |
| A34 | 1147-1275 |
| A74 | 1082 |
| A68 | 1075-1352 |
| A30 | 1060-1232 |
| A11 | 5000-5356 |



| Donor | HLA Type | | | | | | HPA Type | | | | | | ABO | Rh | CMV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | A | B | B | C | C | 1 | 2 | 3 | 4 | 5 | 15 | | | |
| **1** | 1 | *11* | 8 | *35* | *4* | 7 | *a*/b | a/a | a/*b* | a/a | a/a | a/b | O | Neg | Pos |
| **2** | 1 | *11* | 8 | | 7 | | b/b | a/a | a/a | a/a | a/a | a/b | A | Pos | Pos |
| **3** | 1 | *29* | 8 | *44* | 7 | *5* | b/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Pos |
| **4** | 1 | | 8 | | 7 | | *a*/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Neg |
| **5** | 1 | | *52* | *57* | *6* | *12* | b/b | a/*b* | a/*b* | a/a | a/*b* | a/b | A | Pos | Pos |
| **6** | 1 | *3* | 8 | | 7 | | b/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Pos |
| **7** | 1 | | *7* | 8 | 7 | | b/b | a/a | a/*b* | a/a | a/a | a/b | O | Pos | Neg |
| **8** | 1 | *29* | 8 | *44* | 7 | *16* | b/b | a/a | a/a | a/a | a/a | a/b | A | Neg | Pos |
| **9** | *32* | *34* | 8 | *64* | 7 | *8* | b/b | a/a | a/*b* | a/a | a/a | a/b | A | Pos | Pos |
| **10** | 1 | *26* | 8 | *38* | 7 | *12* | b/b | a/a | a/*b* | a/a | a/a | a/b | O | Neg | Pos |

**Mismatches have been highlighted in red italic. Antigens to which the patient has antibodies have been highlighted in yellow.*

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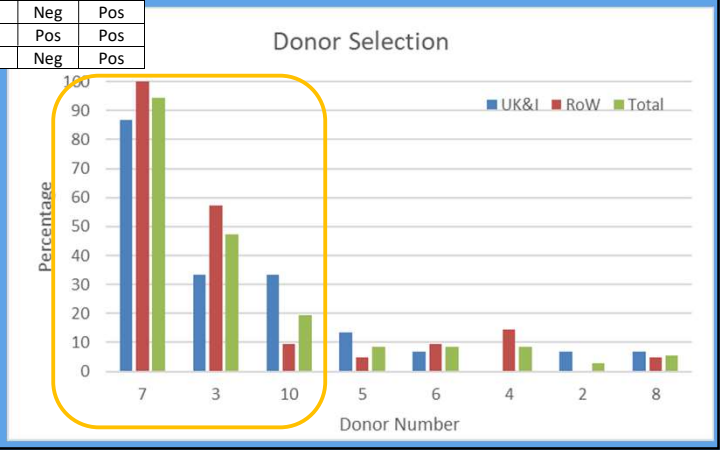
# Which Two of the Platelet Donations Would You Select and Why?

| Donor | HLA Type | | | | | | HPA Type | | | | | | ABO | Rh | CMV |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | A | B | B | C | C | 1 | 2 | 3 | 4 | 5 | 15 | | | |
| 1 | 1 | 11 | 8 | 35 | 4 | 7 | a/b | a/a | a/b | a/a | a/a | a/b | O | Neg | Pos |
| 2 | 1 | 11 | 8 | | 7 | | b/b | a/a | a/a | a/a | a/a | a/b | A | Pos | Pos |
| 3 | 1 | 29 | 8 | 44 | 7 | 5 | b/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Pos |
| 4 | 1 | | 8 | | 7 | | a/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Neg |
| 5 | 1 | | 52 | 57 | 6 | 12 | b/b | a/b | a/b | a/a | a/b | a/b | A | Pos | Pos |
| 6 | 1 | 3 | 8 | | 7 | | b/b | a/a | a/a | a/a | a/a | a/b | O | Pos | Pos |
| 7 | 1 | | 7 | 8 | 7 | | b/b | a/a | a/b | a/a | a/a | a/b | O | Pos | Neg |
| 8 | 1 | 29 | 8 | 44 | 7 | 16 | b/b | a/a | a/a | a/a | a/a | a/b | A | Neg | Pos |
| 9 | 32 | 34 | 8 | 64 | 7 | 8 | b/b | a/a | a/b | a/a | a/a | a/b | A | Pos | Pos |
| 10 | 1 | 26 | 8 | 38 | 7 | 12 | b/b | a/a | a/b | a/a | a/a | a/b | O | Neg | Pos |

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# Which Two of the Platelet Donations Would You Select and Why?

| | UK&I | | RoW | | Total | | Reason for Selection |
|---|---|---|---|---|---|---|---|
| Donor | Number | % | Number | % | Number | % | |
| 7 | 13 | 87% | 21 | 100% | 34 | 94% | **Single antigen HLA mismatch** (B7 could cross-react with A2); **HPA matched** (HPA-1a negative); **ABO matched**; **CMV match**; **No donor-directed HLA/HPA alloantibodies**. Least immunogenic donor. |
| 3 | 5 | 33% | 12 | 57% | 17 | 47% | **2 antigen mismatched** (A29 low frequency and B44 high frequency but low expression);**HPA matched**; **ABO matched**. |
| 10 | 5 | 33% | 2 | 10% | 7 | 19% | **2 antigen HLA mismatches** (A26 and B38 lower frequency rather other mm units); **HPA-3 mismatch**; **ABO matched**; **CMV mismatch** (not relevant is unit is leucodepleted). **No donor-directed HLA/HPA alloantibodies.** |
| 5 | 2 | 13% | 1 | 5% | 3 | 8% | 2 antigen HLA mismatch. No donor-directed HLA/HPA alloantibodies. Avoids HLA-A alleles in the A10 and A19 CREG to which the patient may have cross reactive HLA antibodies |
| 6 | 1 | 7% | 2 | 10% | 3 | 8% | HPA-1a negative, 1 antigen HLA mismatch; ABO matched; CMV mismatched |
| 4 | 0 | 0% | 3 | 14% | 3 | 8% | ABO match, no anti-HLA-DSA found in recipient; CMV match; HPA1a so there is a chance for reaction with patients HPA 1a Ab but all the other donors who are ABO compatible are CMV positive. |
| 2 | 1 | 7% | 0 | 0% | 1 | 3% | HPA matched. |
| 8 | 1 | 7% | 1 | 5% | 2 | 6% | No comments received. |

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# Which Two of the Platelet Donations Would You Select and Why?

| Donor | UK&I Number | UK&I % | RoW Number | RoW % | Total Number | Total % | Reason for Selection |
|---|---|---|---|---|---|---|---|
| **7** | 13 | **87%** | 21 | **100%** | 34 | **94%** | **Single antigen HLA mismatch** (B7 could cross-react with A2); **HPA matched** (HPA-1a negative); **ABO matched**; **CMV match**; **No donor-directed HLA/HPA alloantibodies**. Least immunogenic donor. |
| **3** | | | | | | | |
| **10** | | | | | | | |
| **5** | 2 | **13%** | 1 | **5%** | 3 | **8%** | alloantibodies. Avoids HLA-A alleles in the A10 and A19 CREG to which the patient may have cross reactive HLA antibodies |
| **6** | 1 | **7%** | 2 | **10%** | 3 | **8%** | HPA-1a negative, 1 antigen HLA mismatch; ABO matched; CMV mismatched |
| **4** | 0 | **0%** | 3 | **14%** | 3 | **8%** | ABO match, no anti-HLA-DSA found in recipient; CMV match; HPA1a so there is a chance for reaction with patients HPA 1a Ab but all the other donors who are ABO compatible are CMV positive. |
| **2** | 1 | **7%** | 0 | **0%** | 1 | **3%** | HPA matched. |
| **8** | 1 | **7%** | 1 | **5%** | 2 | **6%** | No comments received. |

**Comments:**
We would suggest selecting Donor 7 (single HLA antigen mismatch, HPA matched, ABO matched, no donor-directed antibodies) and Donor 10 (two low frequency HLA antigen mismatches, HPA matched, ABO matched, no donor-directed antibodies) for this patient.

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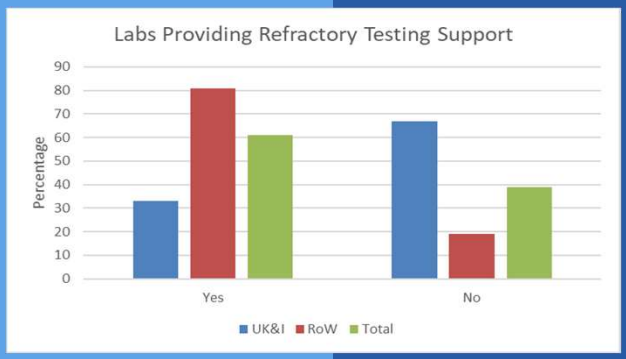
# Q5: Does Your Lab Provide Clinical Testing for Platelet Refractoriness?

| Clinical Service for Refractoriness | UK&I Number | UK&I Percentage | RoW Number | RoW Percentage | Total Number | Total Percentage |
|---|---|---|---|---|---|---|
| **Yes** | 5 | 33% | 17 | 81% | 22 | 61% |
| **No** | 10 | 67% | 4 | 19% | 14 | 39% |

YES

61%



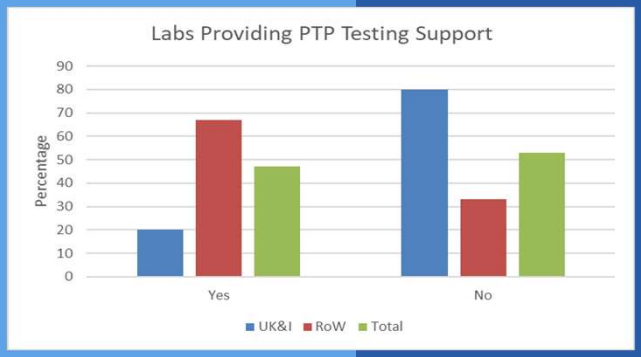

NO

39%

30

# Q5: Does Your Lab Provide Clinical Testing for PTP?

| Clinical Service for PTP | UK&I | | RoW | | Total | |
|---|---|---|---|---|---|---|
| | Number | Percentage | Number | Percentage | Number | Percentage |
| Yes | 3 | 20% | 14 | 67% | 17 | 47% |
| No | 12 | 80% | 7 | 33% | 19 | 53% |




YES

47%

NO

53%

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# Patient Follow Up

During her second cycle of chemotherapy, the patient was admitted to the intensive care unit with respiratory difficulty, no formal diagnosis was made.

At day 31 and showing signs of neutrophil recovery and a general improvement in health, the patient was extubated.

Three weeks later, a bone marrow aspiration showed the patient to be in complete remission.

The patient was considered for a sibling allogeneic haematopoietic stem cell transplant but sadly died due to complications of AML before this could be realised.

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# Suggested Reading

Hawkins J, Aster RH, Curtis BR. Post-Transfusion Purpura: Current Perspectives. J Blood Med. 2019 Dec 9;10:405-415. doi: 10.2147/JBM.S189176. PMID: 31849555; PMCID: PMC6910090.

Estcourt LJ, Birchall J, Allard S, Bassey SJ, Hersey P, Kerr JP, Mumford AD, Stanworth SJ, Tinegate H; British Committee for Standards in Haematology. Guidelines for the use of platelet transfusions. Br J Haematol. 2017 Feb;176(3):365-394. doi: 10.1111/bjh.14423. Epub 2016 Dec 23. Erratum in: Br J Haematol. 2017 Apr;177(1):157. PMID: 28009056.

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# Thanks!

Do you have any questions?

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