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**MLAB 2461 Clinical II
IMMUNOHEMATOLOGY**

**Activity 18: Hemolytic Disease of the Fetus and Newborn Case Studies - Panels,
Eulates, Kleihauer-Betke, RhIg Calculation**

Utilize your notes, lecture guide, lab manual and flow charts to answer each of the following. Criteria for selection of donor units for the infant should include: ABO/D type of the donor unit, age, antigen type (if necessary) and any other special donor requirements such as age of donor unit, CMV, sickle cell, etc.. **The panel number correlates with the questions, i.e., Panels 1A and 1B are to be used to answer questions for number 1.**

1. **PANEL 1A** - A 32 yr old female has been admitted in active labor. This is her third pregnancy and she has not been transfused. Her second child was treated for jaundice using phototherapy. The woman is A positive and has a positive antibody screen. Use **PANEL 1A** to answer the following questions.
 - A. Identify the antibody in her serum.
 - B. State the clinical significance of this antibody.
 - C. **PANEL 1B**- The child has now been born. The results of the cord blood testing are on **PANEL 1B**. Identify the specificity of the coating antibody.
 - D. State the ABO/D type and additional criteria which must be met for selection of the donor unit to be used for a possible exchange transfusion.

2. **PANEL 2** - A 22 year old female has just delivered her second child. She is O positive and the results of her antibody screen are found on **PANEL 2**. The results of the cord blood testing are also found on the same panel. The infant is A positive.
 1. Identify the antibody(ies) in her serum.
 2. State the clinical significance of the antibody(ies).
 3. Identify the antibody coating the infant's cells.
 4. State the ABO and D type and additional criteria which must be met for selection of the donor

unit to be used for a possible exchange transfusion.

3. **PANEL 3** - A 33 year old female has just delivered her second child. She is A negative and her antibody screen is positive. The results of her panel are found on **PANEL 3**. The results of cord cell testing are also found on the same panel. **Below are the results of the ABO/D type on the infant:**

anti-A	anti-B	anti-D	D control	Wk D	Wk D control
4+	0	0	0	4+	4+

DAT on the cord blood is 4+ with monospecific anti-IgG

- a. Identify the antibody in the mother's serum.
- B. Identify the antibody coating the baby's cells.
- C. Explain the cause of the discrepancy in the D typing on the cord cell and what this phenomena is called.

- D. Describe the ABO and D type and additional criteria which must be met for selection of the donor unit for **exchange transfusion**.

- E. Is this woman an RhIg candidate? Explain your answer.

4. The following results were obtained on an HDFN workup.

Mother's ABO/D	O positive
Mother's Antibody Screen	Negative
Baby's ABO/D	A positive
Baby's DAT	1+

An elution was performed on the cord cells with the following results:

Cell Tested	A₁ Cells	B Cells	Screen 1	Screen 2	Screen 3
Eluate	3+	1+	0	0	0
Last Wash	0	0	0	0	0

- A. Interpret the results of the eluate.

- B. Explain why there was reactivity with the B cells.

- C. State the criteria for the donor blood to be issued for this infant, including ABO and D type.

5. The following results were obtained on an HDFN workup:

Mother's ABO/D	O positive
Mother's Antibody Screen	Negative
Baby's ABO/D	B negative
Baby's DAT	1+

Cell Tested	A₁ Cells	B Cells	Screen 1	Screen 2	Screen 3
Eluate	0	2+	0	0	0
Last Wash	0	1+	0	0	0

- A. Interpret the results of the eluate.
- B. Are these results valid? Explain your answer, including what must be done to resolve this problem.
- C. State the criteria for selection of the donor blood for this infant for routine transfusion, include ABO and D type.

6. The following results were obtained on an HDFN work up. These results were performed by a tech at the end of her shift. She is in a real hurry to leave as it has been a horrible day in the blood bank.

Mother's ABO/D	O positive
Mother's Antibody Screen	Negative
Baby's ABO/D	B positive
Baby's DAT	3+

You have just come on duty and are asked to perform the elution studies. Based on the results obtained by the previous tech you perform the elution and obtain the following results.

Cell Tested	A₁ Cells	B Cells	Screen 1	Screen 2	Screen 3
Eluate	1+	2+	3+	3+	0
Last Wash	0	0	0	0	0

- A. Interpret the results.

- B. Explain as best you can the discrepancy which has occurred.

- C. What action must you take next to aid in the resolution of this problem.

Kleihauer Betke-Acid Elution Determination of Quantity of Rh Immune Globulin To Give

1. How much anti-D is in a one mL vial of RhIg?
2. What is the volume of D positive packed red blood cells covered by 1 vial of RhIg?
3. What is the volume of D positive whole blood covered by 1 vial of RhIg?

For each of the following the mother is:

- **D negative**
- **Antibody screen is negative**
- **Cord blood types as D positive**
- **Fetal Bleed Screen test is positive**

Due to the positive Fetal Bleed Screen a Kleihauer-Betke Acid Elution test has been performed. The number of fetal cells in 2000 adult cells have been counted. For each of the following calculate the number of vials of Rh Immune Globulin needed to cover the bleed. **SHOW YOUR WORK AND INCLUDE:**

- Percent bleed
- Calculated volume of the bleed
- Calculation to determine number of vials of RhIg needed

A. 35 fetal cells

B. 12 fetal cells

C. 21 fetal cells

D. 5 fetal cells