OOPS, I did it again!

Preventing errors in paediatric testing and component selection in the transfusion laboratory

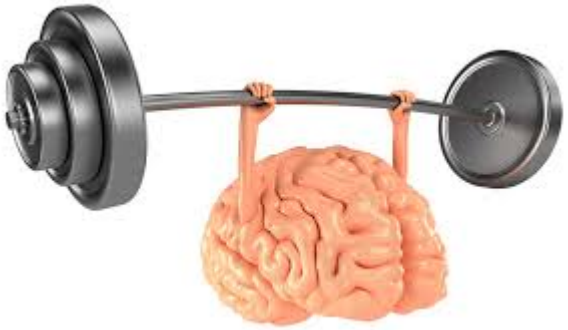
Carol Cantwell

Tell me about you?

What's your job title?

1. Biomedical Scientist
2. Senior Biomedical Scientist
3. Chief Biomedical Scientist
4. Haematologist
5. Other

Problem Areas……



What's your laboratory's approach to maternal samples/history?

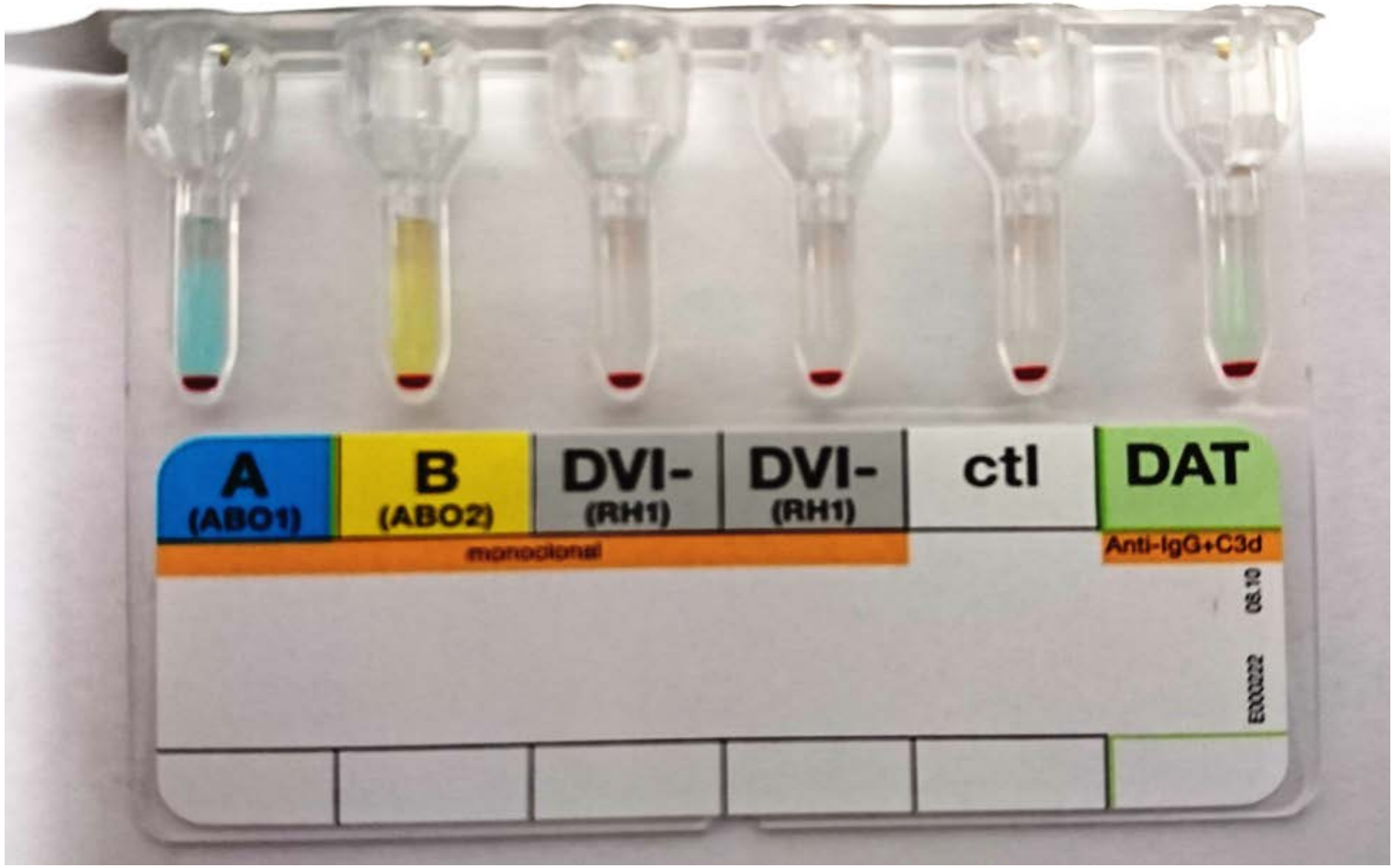
1. Get a maternal sample and history
2. Get a maternal history, perform testing on the neonate sample

Request form and sample

- Patient demographic information on request form–
  - Male Infant Cutie
  - DOB 13/09/17
  - Hospital Number M555555
  - Ward SCBU

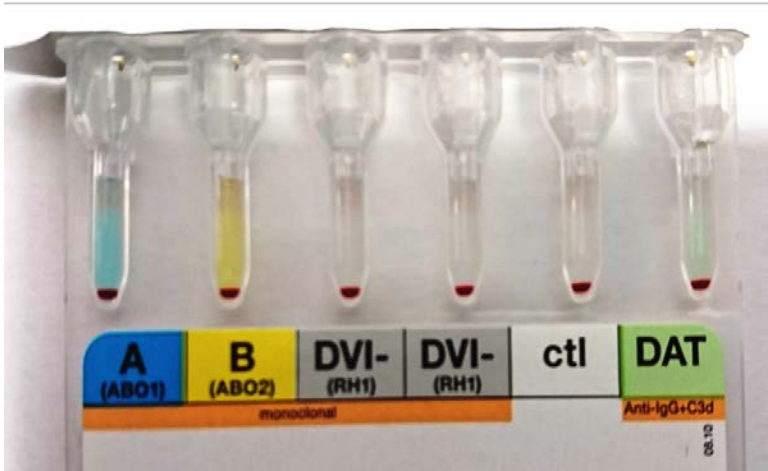
- Clinical information, born at 34+5/40
- Checked form against sample, all labelling requirements met and are correct
- Request for group and DAT

Grouping and DAT Card



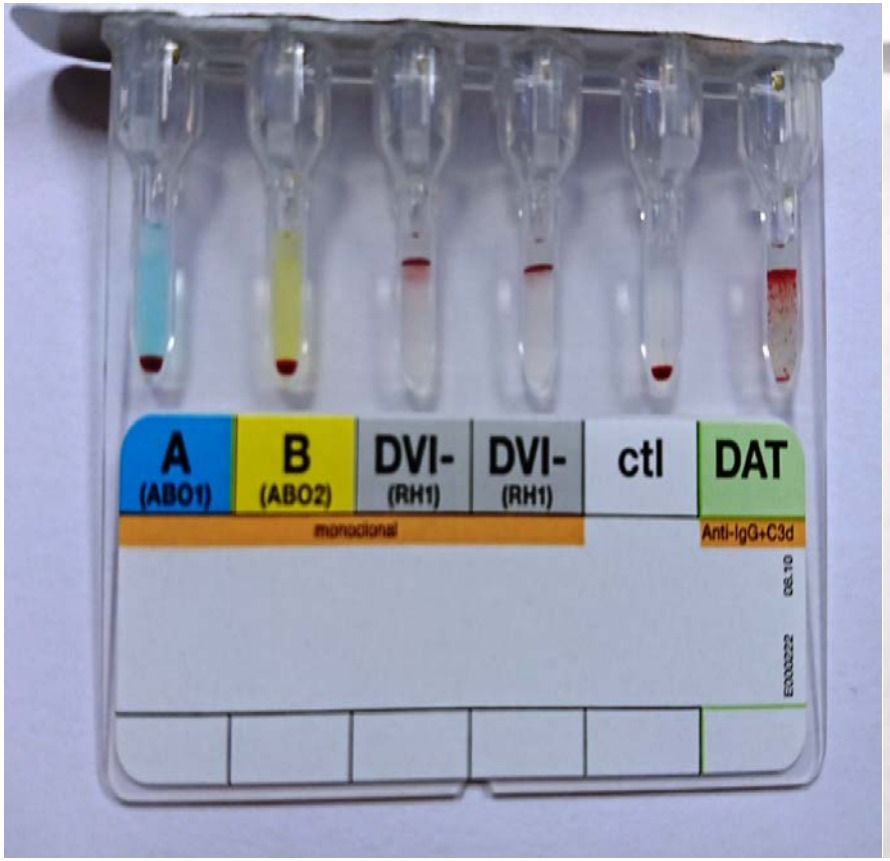
What group is the neonate?

1. O Rh D Neg
2. O Rh D Pos
3. I need to know the mother's group before I answer this question
4. I need to know the mother's and the neonate's history before I answer this question
5. I don't know



Card 1 -Grouping card from fetal sample pre first I.U.T.

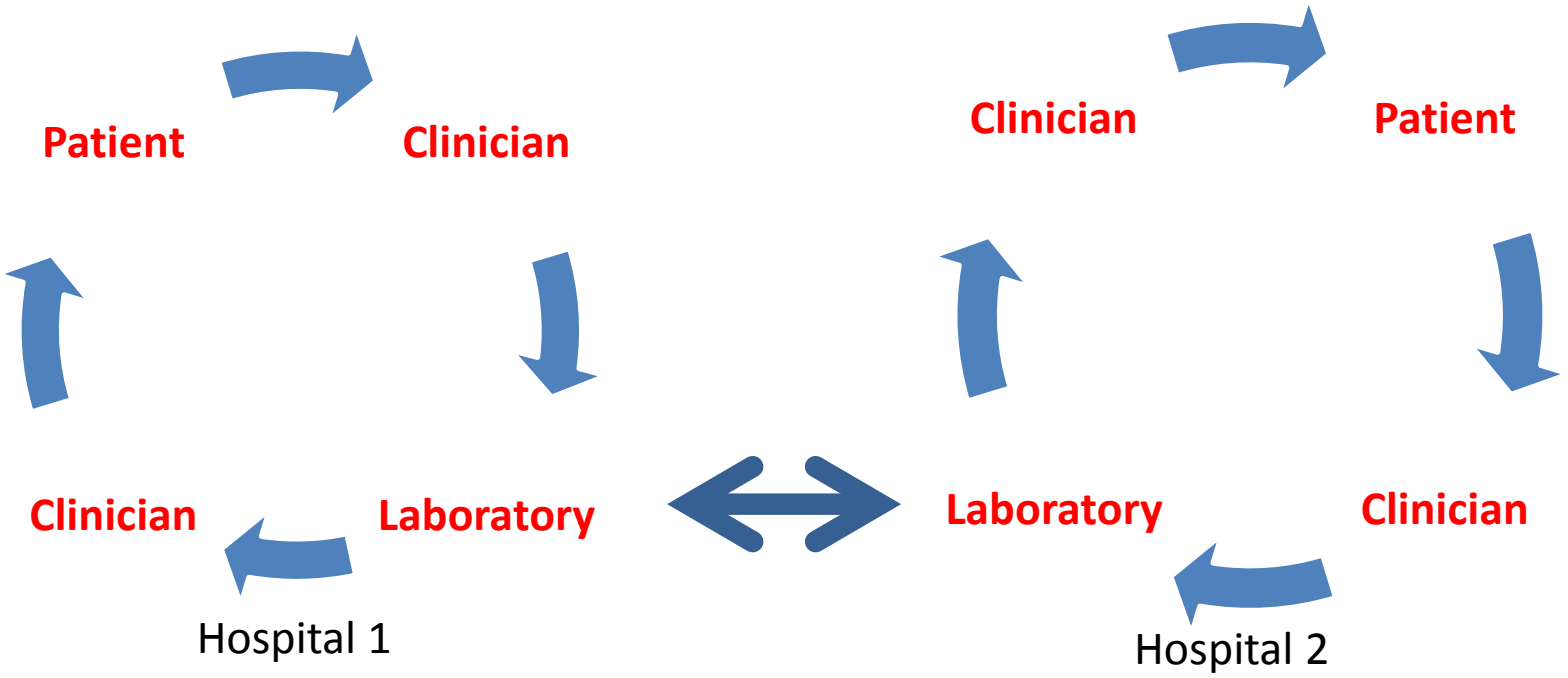
Card - 2 post IUT sample



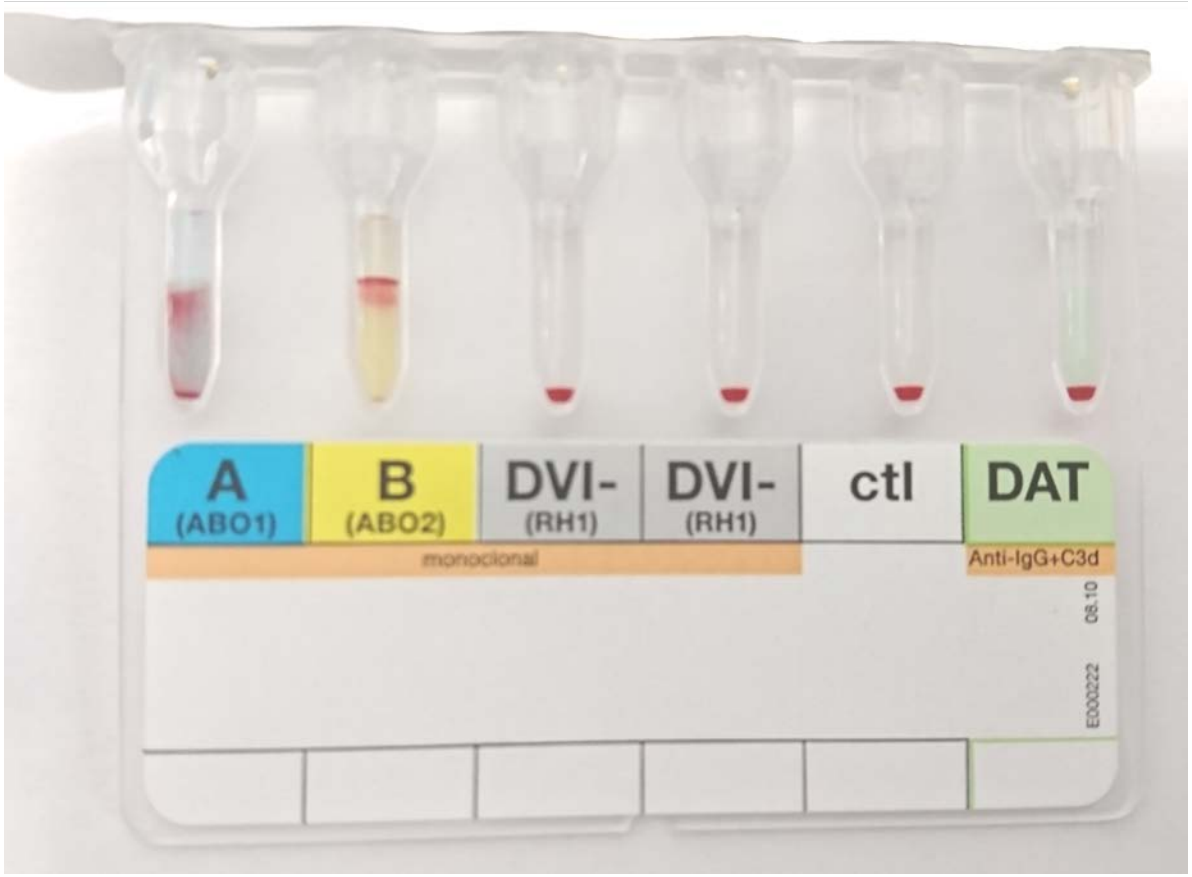
Card 1

Card 2

Communication



Grouping Card 2



What group is the neonate?

1. AB Rh D Neg
2. AB Rh D Neg but transfused O Rh D Neg red cells
3. I need to get mother's group before I answer this question
4. I need to know the mother's and the neonate's history before I answer this question
5. I don't know

It’s easy to get it wrong…..

- Fetal/neonatal ABO red cell antigens may be poorly expressed
- Due to the naivety of the fetal/neonatal immune system, the corresponding ABO red cell antibodies are not usually well-developed
- Maternal IgG ABO antibodies may be detectable in the fetal /neonatal plasma

Compounded if very small sample perform group manually.

Antibody Screens <4 month infants

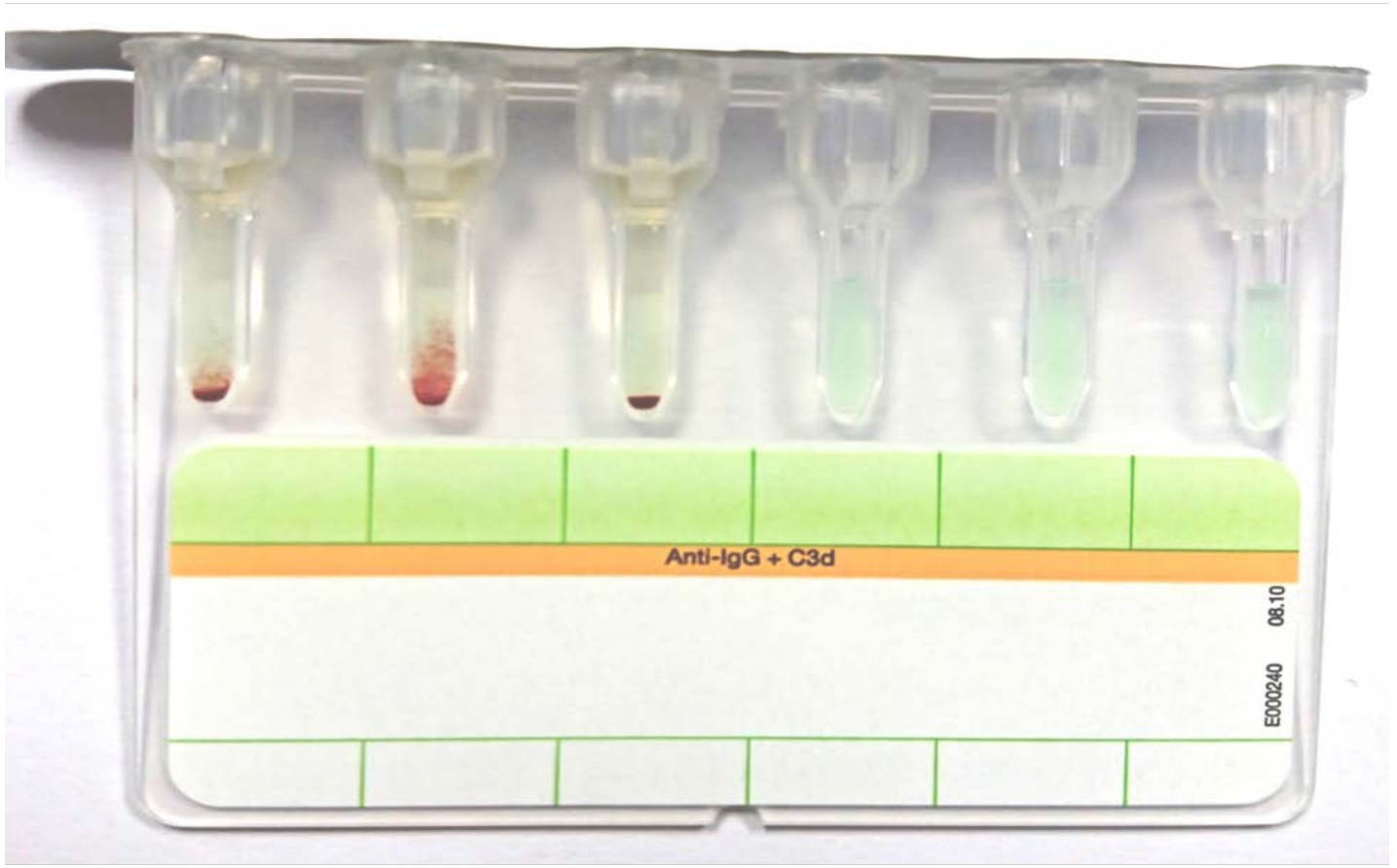
Sometimes size matters!

Antibody Screen

- Negative screen but what if DAT is positive?

Antibody Screen

- Weakly positive screen



Blood Group and Antibody Screens <4 months

Confirmatory Group Sample

Blood Group and Antibody Screen >4 Months

Treat as an adult with regard to testing

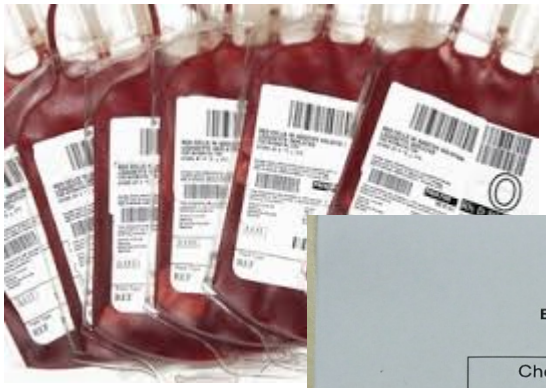
Are the red cell and component orders for <18 year olds requested in mL?

1. Yes
2. No
3. Other

Special Blood if under 1 year

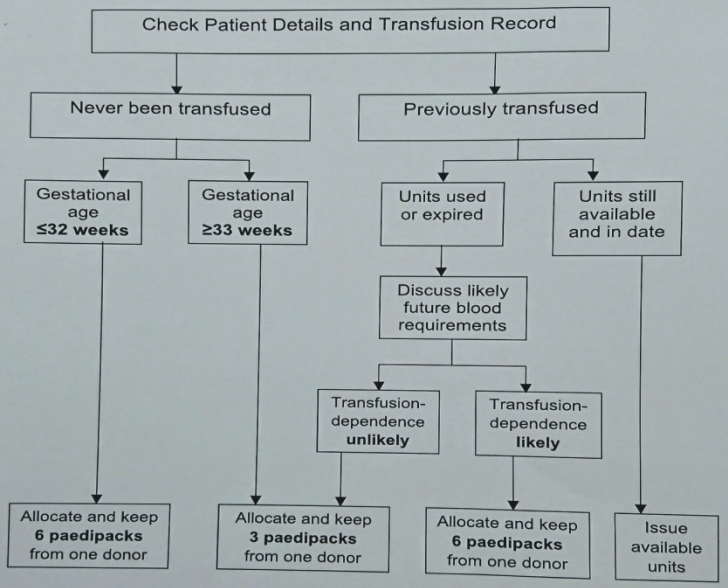
- Donors:
  - Previously tested donors who have given at least one donation in the previous two years
  - Negative for mandatory microbiology markers for the current donation including Hepatitis E RNA negative
- Processing and selection
  - Components are tested and shown to be free of clinically significant, irregular blood group antibodies including HT anti-A and anti-B. Additional IAT screen for clinically significant antibodies

Paedi-packs



Appendix 4

Example neonatal paedipack allocation algorithm



This is an example of an algorithm used to allocate paedipacks in order to help reduce donor exposure. It is based on the likelihood of an infant needing repeat transfusion dependent upon gestational age. Gestational age refers to gestational age at birth. When a new paedipack is allocated it should be as fresh as possible in order to maximize the available shelf-life. Local data should be used to help develop the algorithm. Audits should be undertaken periodically to assess its effectiveness in minimizing donor exposure.

Emergency Situations

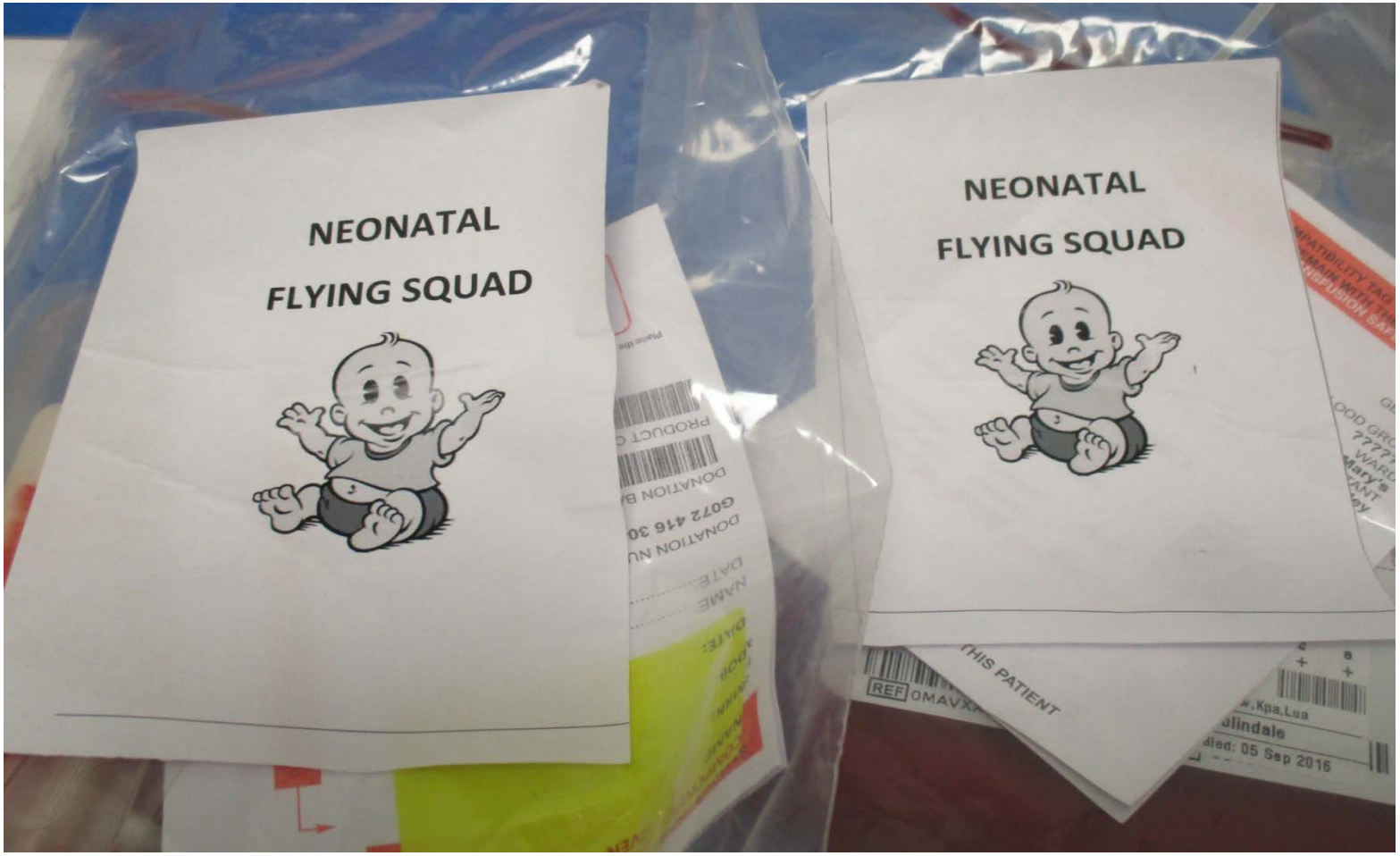
Does your laboratory have an agreed hierarchy for following in an emergency if the correct component is not available?

1. Yes
2. No

Does your hospital have a baby image displayed on the emergency O Rh D Neg clearly showing that it is for neonate/infant use?

1. Yes
2. No

Emergency Situations



Special Requirements Not Met

- Irradiated components
- Phenotyped units
- Sickle cell disease patients
- Shared care patients
- Post solid organ transplants
- Hematopoietic stem cell transplant patients

  - Request forms/Electronic requests need to be completed appropriately

We all make mistakes..

What can the Hospital Transfusion Team Do?

- Education sessions for clinical staff in SCBU/PICU so the staff understand the importance maternal samples, maternal history and neonatal history.
- Implement a process for obtaining information on mother/neonate and obtaining maternal samples, use proforma's all the time
- Facilitate the ability to have maternal samples e.g. hospital numbers, concessionary release
- Education sessions for clinical staff regarding completing clinical information on request forms e.g. sickle cell disease
- Support biomedical scientist learning, shared learning between Haematologists and Scientists

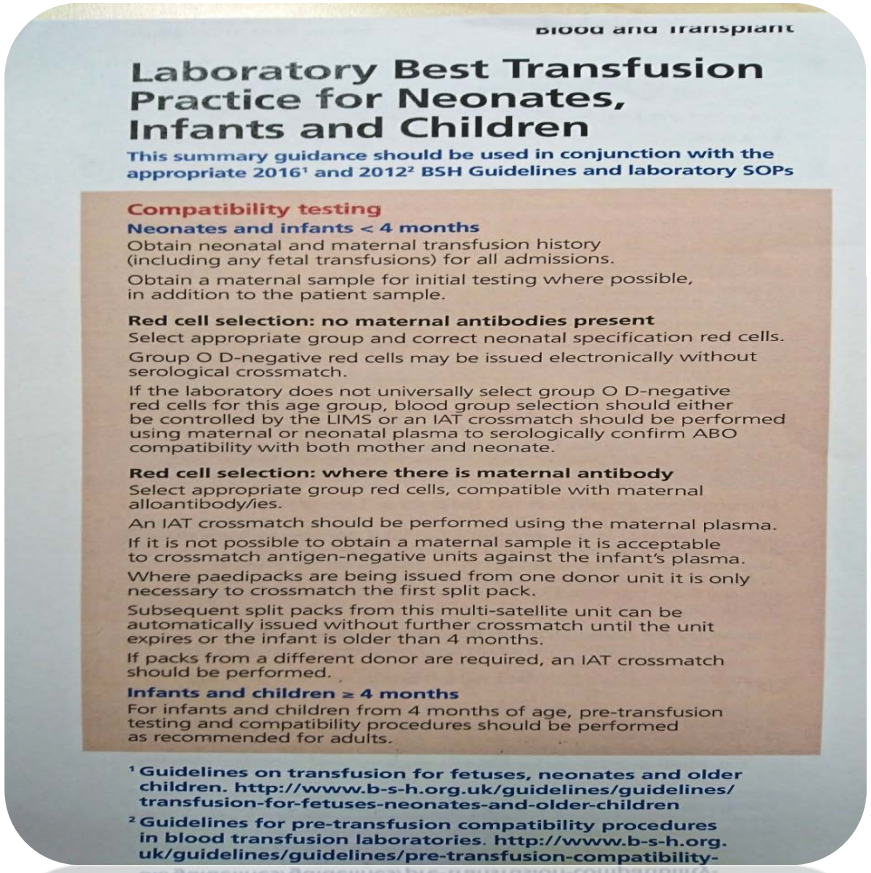
What can the Chief Biomedical Scientist Do?

- Have clear SOPs that staff can follow
- Educate, train and proficiency test your scientists
- BTLP TACT scheme
- Risk assess manual grouping of neonatal samples
- Consider LIS solutions/development, mum/baby linking, antibody/antigen matching of red cells, special requirements and age rules
- Don't just use warnings get the LIS to perform the checks
- Gap analysis between SOPs against the BSH 2016 and 2012 guidelines
- Review SHOT report, could it happen your lab?

What can the Biomedical Scientist Do?

- Ensure you understand and follow SOPs
- Re-check the request form for clinical information when issuing red cells and components
- Pay attention to any warnings/flags in the computer system
- Perform TACT exercises
- Don’t take shortcuts

Tools Available



Blood and Transplant

Laboratory Best Transfusion Practice for Neonates, Infants and Children

This summary guidance should be used in conjunction with the appropriate 2016[1] and 2012[2] BSH Guidelines and laboratory SOPs

Compatibility testing

Neonates and infants < 4 months

Obtain neonatal and maternal transfusion history (including any fetal transfusions) for all admissions.

Obtain a maternal sample for initial testing where possible, in addition to the patient sample.

Red cell selection: no maternal antibodies present

Select appropriate group and correct neonatal specification red cells.

Group O D-negative red cells may be issued electronically without serological crossmatch.

If the laboratory does not universally select group O D-negative red cells for this age group, blood group selection should either be controlled by the LIMS or an IAT crossmatch should be performed using maternal or neonatal plasma to serologically confirm ABO compatibility with both mother and neonate.

Red cell selection: where there is maternal antibody

Select appropriate group red cells, compatible with maternal alloantibody/ies.

An IAT crossmatch should be performed using the maternal plasma.

If it is not possible to obtain a maternal sample it is acceptable to crossmatch antigen-negative units against the infant's plasma.

Where paedipacks are being issued from one donor unit it is only necessary to crossmatch the first split pack.

Subsequent split packs from this multi-satellite unit can be automatically issued without further crossmatch until the unit expires or the infant is older than 4 months.

If packs from a different donor are required, an IAT crossmatch should be performed.

Infants and children ≥ 4 months

For infants and children from 4 months of age, pre-transfusion testing and compatibility procedures should be performed as recommended for adults.

[1] Guidelines on transfusion for fetuses, neonates and older children. http://www.b-s-h.org.uk/guidelines/guidelines/transfusion-for-fetuses-neonates-and-older-children

[2] Guidelines for pre-transfusion compatibility procedures in blood transfusion laboratories. http://www.b-s-h.org.uk/guidelines/guidelines/pre-transfusion-compatibility-

BTLP TACT

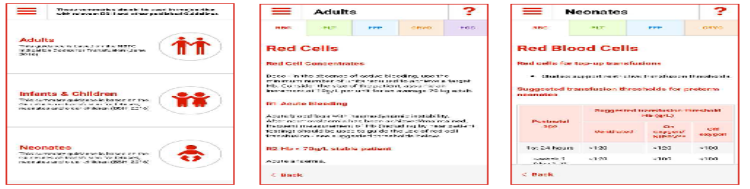
Blood Transfusion Laboratory Practice

Training, Assessment and Competency Tool

NHS Blood and Transplant

Blood Components App

The Blood Component Indication App summarises relevant national transfusion guidelines for Adults, Infants & Children and Neonates.



This App will act as a prompt for clinicians to facilitate appropriate use of blood and enable robust documentation of indications.

Available NOW:

Search: 'Blood Components'

Download on the App Store | GET IT ON Google Play | Coming Soon

Visit: https://goo.gl/whCRF6

Scan:

Thanks

- My team in Mullingar Hospital

- Rachel Moss, TP in GOSH
- Dr Helen New