Reacting to Transfusion Reactions

Process Algorithms for Investigations Within the Laboratory

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Algorithm

- Originates from al-Khwarizmi, a famous Persian mathematician
- It is a step-by-step procedure for calculation, data processing and *automated reasoning*.
- It is an effective method of finite well-defined instructions leading from an initial state to eventually producing "output" at a final ending state.

Thank you!

Investigation and reporting of a transfusion reaction

In BCFH labs:

- Involves one policy, three SOPs, one datasheet/ form, two further forms and two competencies

Policy

- Gives definitions, scope and overview

SOPs

1. How to investigate the TxR
2. How to recall products – not dealt with here
3. How to report to SHOT/SABRE – give it to Mandy!

How to investigate a TxR - 1

States “any adverse effect of transfusion should be investigated” and gives examples, such as:

- ↑temp., chills, rigors, Hburia and Hbaemia
- Vomiting, diarrhoea, hypotension, tachycardia, back pain, headache, fever, nausea, bleeding at puncture site, renal failure, sense of impending doom……

- Causes might be
  - Tx of incompatible blood
  - WBC abs in recipient donor
  - Bacteria toxins in the donation
  - IgA deficiency, platelet antibodies
  - The patient! May be septic, have their own antibodies,…….
- Dealt with by trained and competent BMSs only

How to investigate a TxR - 2

Lab commence “Summary of events” form.

Advise stop the Tx but maintain line.

Advise contact with Haematologist who will assess severity and the further investigation required

Send clinician Trust “Suspected TxR” form and Lab to assess the need to recall (via imputability datasheet)

Lab commence “Log of forms” form

How to investigate a TxR - 3

Reclaim and quarantine all issued blood and blood components, including implicated unit and giving set.

Request post-Tx blood (3x6mL EDTA) and first urine samples

Check all documentation, labelling, etc.

Investigation should be initiated as soon as reported

Investigation should be completed immediately if:

- ABO incompatibility is suspected
- Other clinically significant incompatibility is suspected

Other investigations to be completed within 24 hours

How to investigate a TxR – 4a

Lab Investigations

Inspect integrity of implicated unit and giving set

ABO and Rh (D) type donor unit(s)

On both pre- and post- Tx samples

1. Compare colour
   - Look for evidence of haemolysis, jaundice, turbidity
2. G&S (IAT, Enzyme, Multiple panels)
   - If groups differ then maybe ABO haemolytic TxR
   - If Ab screen is positive then phenotype implicated units

How to investigate a TxR – 4b

3. DAT
   - If post-Tx sample pos then further Ab screens / refer to NHSBT
4. Serological X/M against implicated unit(s)
   - If pos then further Ab screens / refer to NHSBT
5. If all the above are negative suspect WBC or platelet antibodies or bacterial contamination and send to NHSBT

Audit of TxR procedure

- Reviewed the last TxR from a laboratory procedure perspective at both Barnet and Chase farm sites
  - One Non-Conformance
    - No pre-transfusion DAT result
  - One Observation
    - SOP makes no mention of what to do with untransfused units
- During preparation of this talk another two NCs and one observation found
- In the 16 cases within the last 18 months there have been no serological causes of TxR at BCFH

Comparison against new recommendations

Recommendation	Compliant
In all moderate and severe transfusion reactions, standard investigations, including full blood count, renal and liver function tests and assessment of the urine for haemoglobin should be performed.(2C) Investigations dependent on symptom complex. Further investigations should be guided by the clinical symptoms and signs, rather than the presumed category of reaction.	?
If febrile symptoms of moderate severity are sustained, implicated units should be returned to the laboratory for further investigation, the blood service contacted immediately so that associated components from the implicated donation can be withdrawn and the patient sampled for repeat compatibility and culture.(1C)	?
Patients who have experienced moderate or severe allergic reactions should have IgA levels measured. Low levels found on screening, in the absence of generalized hypogammaglobulinaemia, should be confirmed by a more sensitive method and IgA antibodies should be checked. Patients with IgA deficiency diagnosed after an ATR should be discussed with an allergist or immunologist regarding future management. (2C) Testing the patient for human leucocyte antibodies (HLA), human platelet antibodies (HPA) or human neutrophil-specific antibodies (HNA) These are usually an incidental finding in patients with ATR and routine screening is not recommended	?
In the absence of platelet or granulocyte transfusion refractoriness, or acute post-transfusion thrombocytopenia or leucopenia, investigation of the patient with ATR for leucocyte, platelet or neutrophil-specific antibodies is not indicated. (1B)	?

Conclusions

- I think our procedures largely cover what is required
- They would benefit from streamlining and further review
- Many of the new recommendations are already performed on advice from the Haematologist
- These need to be captured in the revised SOP/Policy

Thanks

- Mandy Hobson – Transfusion Practitioner
- BT/Haem staff
- The BT Community who freely supplied their protocols

Those of you who managed to stay awake!