Review of the Massive Transfusion Protocol at Canberra Hospital

ACT Pathology

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- Tertiary referral centre
- Services the ACT and South East of NSW
- Has about 600 beds - supports a population of about 550,000
Definition of Massive Transfusion

Replacement of:

1. > 1 blood volume within 24hrs

2. > 50% of blood volume in 4hrs (approx 5 bags of pRBC)
Massive Transfusion Protocol (MTP)

The Journal of TRAUMA Injury, Infection, and Critical Care. 2006; 60:S91-S96

Massive Transfusion Practices Around the Globe and a Suggestion for a Common Massive Transfusion Protocol

In 2006 there were relatively few institutions had massive transfusion protocols.

In a massive transfusion:

1. Coagulopathy is common
2. Once present it is difficult to correct
3. Early and intensive therapy with plasma and platelets associated with better outcomes

Proposed Protocol = 1:1:1  1pRBC: 1FFP : 1Plat
Why do we need MTPs?

Because we have to:

NPAAC: Requirements for transfusion laboratory practice – 2nd Ed 2013

- S6.6 The Laboratory must have a written policy for provision of blood components and blood products in massive blood loss / critical bleeding.

ANZSBT Guidelines: Guidelines for Pretransfusion Laboratory Practice - 5th Ed 2007

2.5 CRITICAL BLEEDING / MASSIVE TRANSFUSION

- The laboratory must have a written policy for management of massive transfusions. It is recommended that this is developed in consultation with the clinicians responsible for managing these events.
Why do we need MTPs?

The real reason:

1. Facilitates communication
2. Ensures frequent laboratory monitoring
3. Reduces delays and errors in ordering and administration of blood and blood products
Transfusion related mortality graph: mortality shown against rate of use of packed red blood cells (PRBC) over first 24 hours.
MTP worksheet at TCH

• Introduced by 2011. MTP SOP had already been in use for a few years. Worksheet helped to formalise and record processes.

Worksheet aimed at improving:

1. Communication
2. Timely delivery of blood products
3. Improving TAT of urgent tests
4. Increasing ratio of FFP:pRBCs
Massive Transfusion Worksheet

Upon notification of a “Massive Transfusion Protocol” (MTP) send:

- 4 units Packed Red Cells and
- 4 units Fresh Frozen Plasma

Further requests for red cells/FFP should aim for a 1:1 ratio.

Request that a FBC and Coags with fibrinogen be collected as soon as possible:
Send request form and tubes with first lot of product.

- Platelets and cryoprecipitate will be sent out based on pathology results and/or haematologist approval.

NB: Remember to use “Warm” comment in the “special transfusion” instructions.

Patient’s Name: _____________________________________________________________

MRN: ___________________ Episode number: ___________________ DOB: ________________

Blood Group: ___________ Antibody Screen: _______________ Date/Time: ________________

Reason for MTP: _______________________________ Who initiated MTP?: ___________________

Haematologist Contacted: ______________________ Date / Time: _______________________

Pathology Reception and Haematology / Coags notified to process samples urgently:

Out of Hours: On-call officer notified:

Check Blood and FFP stocks and if required order from ARCBS (ACT):
ACT Pathology MTP

Patient Location:
Ward:___________________________ Time:___________ Pager
#____________________
MO Contact:_____________________ Ph.
Number_________________________________
Ward:___________________________ Time:___________ Pager
#____________________
MO Contact:_____________________ Ph.
Number________________________________
Ward:___________________________ Time:___________ Pager
#____________________
MO Contact:_____________________ Ph.
Number________________________________

MTP stood down Date/Time:________________ Who
By_____________________________

MTP Courier
Phone switch “8”, initiate Massive Transfusion Protocol and state the location of MTP.
A wardsperson is allocated to Transfusion for the duration of the MTP. They will call us for instructions and provide pager #. The wardsman supervisor can be contacted on page 50487.
How to review the effectiveness of MTP?

Currently – very little formal review:
- Some discussion when there are courier problems
- Informal discussion with staff

What could be looked at more formally:
The MTP worksheet makes analysis much easier:
- Correct ratio of FFP:pRBC
- Appropriate supply of cryo, Plts, rVII

What is the most efficient and effective way to review the data?
Review MTP by data?

What data would be useful?

• How many MTPs each year?

• How to analyse all the MTPs in one year?

Top ten biggest users of red cells compared

• Breakdown of FFP:RBC
An attempt at data collection....
Are we getting onto these faster and reducing the number of cases escalating to MTPs?

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of MTPs</th>
</tr>
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<tbody>
<tr>
<td>2011</td>
<td>65</td>
</tr>
<tr>
<td>2012</td>
<td>85</td>
</tr>
<tr>
<td>2013</td>
<td>82</td>
</tr>
<tr>
<td>2014</td>
<td>48 (to date)</td>
</tr>
</tbody>
</table>
By data extraction the 10 largest users of red cells in each year were looked at - ? decreasing numbers of products ?

Did the ratio of FFP:RC increase closer to 1:1 ie. 50%?
MTP in a changing environment

- Changing use of pharmaceuticals and blood products
  - Novoseven
  - Tranexamic acid
  - Fibrinogen concentrates in future

- Better surgical procedures
  - Increasing use of angiography to help reduce bleeding

- Cell-salvage

- Coagulation testing
  - ROTEM and TEG
So how to audit MTPs?
What do we want to know – the detail?

- Code activation – were all the correct parties notified?
- Is a courier available?
- Pathology tests (esp. coags, fbc) prioritised?
- Was FFP thawed as soon as MTP activated?
- Were MTP packs sent?
- What was the ratio of FFP:RC’s?
- Platelets and cryo sent appropriately?
- What do blood gases show?
- Stock ordered when critical levels reached?
- Was novoseven required?
- Was the MTP stood down?
KEEP CALM
AND
LEARN HOW TO STOP
THE BLEEDING