

Paediatric Massive Transfusion Protocol

Team leader responsibilities

- Call coagulation lab and send coagulation requests.
- Activate protocol: Call blood bank and say, 'I am activating the Paediatric Massive Transfusion Protocol Alpha, Bravo or Charlie.'
- Call for each box as required and send someone to pick it up.
- Alternate infusions of products to avoid swings in Hb and coagulation.
- Call blood bank when stopping MTP.

Blood bank responsibilities

- Process X-match sample as soon as possible.
- Call NZBS medical specialist after issuing MTP Box One.
- Thaw next box in advance and await request.
- Ensure supply of platelets. If no neonatal platelets for Alpha, contact TMS.
- Provide red cells less than 14 days old whenever possible.

Contacts

- Blood bank.
- Coagulation lab.

Additional treatment

- Ongoing haemorrhage after box three - if PR > 1.5 or aPTT > 40, consider additional 20 mL/kg FFP.
- If fibrinogen < 1 g/L, consider additional 5 mL/kg cryoprecipitate.
- If platelets < 75 x 10⁹/L, consider additional 10 mL/kg platelets.
- If ionised Ca⁺⁺ < 1 mmol/L, give 0.3 mL/kg calcium gluconate.
- Watch for hyperkalaemia and treat.

Massive bleeding with either shock or abnormal coagulopathy

Ensure delivery of X-match specimen to blood bank

Alpha
0-10 kg

1 adult RBC
O neg or type specific
Give 15 mL/kg

Bravo
11-20 kg

1 adult RBC
O neg or type specific
Give 150 mL

Charlie
21-45 kg

Give 1 unit O neg or type specific RBC

Ring blood bank to activate Paediatric MTP

REQUEST, DELIVER AND TRANSFUSE AS BELOW:

MTP BOX ONE

1 adult RBC
1 adult FFP
1 cryoprecipitate
1 neo platelet
Transfuse 10 mL/kg of each in the following order:
RBC, FFP
RBC, cryo
0.45 mL/kg calcium gluconate
RBC, FFP
RBC, Pit
0.45 mL/kg calcium gluconate
Beware of K⁺

and repeat

MTP BOX ONE

1 whole blood only
or
1 adult RBC and 1 adult FFP
0.3 mL/kg calcium gluconate

MTP BOX TWO

1 adult RBC
1 adult FFP
1 cryoprecipitate
0.3 mL/kg calcium gluconate

MTP BOX THREE

1 adult RBC
1 adult FFP
150 mL platelets
0.3 mL/kg calcium gluconate

Beware of K⁺

and alternate Boxes Two & Three

MTP BOX ONE

1 whole blood only
or
2 adult RBC and 2 adult FFP
0.3 mL/kg calcium gluconate

MTP BOX TWO

2 adult RBC
1 adult FFP
2 cryoprecipitate
0.3 mL/kg calcium gluconate

MTP BOX THREE

2 adult RBC
2 adult FFP
1 adult platelets
0.3 mL/kg calcium gluconate

Beware of K⁺

and alternate Boxes Two & Three

Check

- Coags
- FBC
- ABGs
- K⁺/Ca⁺⁺

Repeat every 30 min

Check

- Coags
- FBC
- ABGs
- K⁺/Ca⁺⁺

Repeat every 30 min

Tranexamic acid (TXA)

- Loading dose: 15 mg/kg (max 1 g).
- Consider maintenance infusion: 2 mg/kg/hour.

Typical component volumes

- Red cells: adult: 300
- FFP: adult: 245
- Platelets: neonatal: 50 mL/adult 270
- Cryoprecipitate: 100 mL

Note: ABGs = arterial blood gases; aPTT = activated partial thromboplastin time; Ca = calcium; coags = coagulation screen; FBC = full blood count; FFP = fresh frozen plasma; K = potassium; NZBS = New Zealand Blood Service; PR = prothrombin ratio; RBC = red blood cell; TMS = transfusion medicine specialist; TXA = tranexamic acid.