# Massive Transfusion Protocol

**OR Days** 0630-2230 M-F

### Physician Leader

- **Determine need for MTP:** notify circulating RN
  - Confirm arrival of first 4 units PRBC to be given by primary assistant as determined by Blood Bank (uncrossmatched if necessary)
  - Confirm first set of labs drawn by primary assistant (tube packs in MTP cart)
    - Set 1: 1 pink (if no T&C), 1 purple, 1 blue, 2 green
  - Use cell saver if possible.
    - (If using, consider extra FFP)

- **DETERMINE INTERVENTION WITHIN 15 MIN** (ex: surgery, embolization, GI Lab, Ethicist [Miriam Cotler 829-8879])
  - If intervention is Cath Lab, notify House Supervisor 829-8268
  - Determine ability to release other departments
  - Deactivate protocol, notify Primary Assistant

- **Call Blood Bank 829-8110 and provide Spectralink # for all lab communication**
  - Provide Transporter with patient labels for blood pick up
  - Setup Level 1 rapid transfuser and obtain paperwork in MTP cart
  - Give “Massive Transfusion Packs” automatically sent by Blood Bank every 30 min (save blood bags in room to reconcile unit #s on tally sheet)
  - Record blood products and labs on MTP tally sheet
  - Draw labs and iStat every 30 min, use MTP lab packs in MTP cart, place patient sticker on lab
  - *Instruct transporter that all blood tubes are hand delivered, no tube system*
  - ABG every 30 min, call RT 829-6504 for pick-up (give RT Spectralink # for results)
  - Give 2 units pooled cryoprecipitate if fibrinogen less than 100 (call blood bank to inform them to put in next MTP pack)
  - Notify charge RN and Blood Bank when protocol deactivated and put MTP blood tally sheet in chart

### Primary Assistant

- **Put MTP order in HCLL**
  - Notify Chemistry, Hematology, and Specimen Processing. Provide them with Spectralink # from Primary Assistant
  - Issue 4 units of PRBC (uncrossmatched if necessary)
  - Thaw 4 units of FFP to start assembling Massive Transfusion Packs
    - **MASSIVE TRANSFUSION PACK:** 4 units PRBC, 4 units FFP, 1 unit of platelets (platelets administered in alternating packs, i.e. R1, R3, R5)
  - New Massive Transfusion Pack every 30 min, call Spectralink # when each pack is ready
  - When protocol deactivated, notify Hematology, Chemistry, and Specimen Processing

### Blood Bank 829-8110

- **Run default labs when tubes arrive, approximately every 30 min. CBC no diff., PT/PTT, INR, fibrinogen**
  - Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received
  - Call with lab results to Spectralink # provided
  - If fibrinogen <100, notify Blood Bank to thaw 2 units of pooled cryoprecipitate
  - When fibrinogen >100, notify Blood Bank to stop thawing pooled cryo

### Hematology 829-8993

- Run default labs when tubes arrive, approximately every 30 min. BMP, Ionized Ca and Mg
  - Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received
  - Call with lab results to Spectralink # provided

### Chemistry 829-8855

- Run default labs when tubes arrive, approximately every 30 min. BMP, Ionized Ca and Mg
  - Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received
  - Call with lab results to Spectralink # provided

### RESOURCES

- **Massive Transfusion Packs arrive every 30 min, see red highlighted box**
- **Labs in pre-selected tubes/ABG/iStat are drawn every 30 min**
- **Post-resuscitation, supplemental product guide:**
  - INR > 1.5, give 4 units FFP
  - Platelets < 50 K, give 1 unit platelets
  - Additional PRBC’s as indicated by H+H or rate of hemorrhage
  - If fibrinogen <100, give 2 units pooled cryoprecipitate

### Physician Leader considerations:

- Contact Hematologist
- Contact IR/GI Lab Surgeon
- Give Novoseven**
- Give DDAVP***
- Give tranexamic acid**
- **See MTP Med Administration Sheet

### Normal lab values:

- **Mg (1.6-2.6 mg/dL)
- Ionized Ca (1.16-1.32 mmol/L)
- ABG pH (7.38-7.42) pCO₂ (38.0-42.0 mmHg) pO₂ (80-100 mmHg)
- Hgb and Hct
- Female: Hgb 12-15 gm/dL, Hct 36-48%
- Male: Hgb 13.9-16.3 gm/dL, Hct 39-55%
- **PT/PTT (PT: 12.3-14.9 sec) (PTT: 24-37 sec)
- **INR (0.9-1.1)
- Fibrinogen (200-460 mg/dL)
- Platelet (140-400)
- K (3.3-5.1 mEq/L)
- CI (98-107 mEq/L)
- Na (136-145 mEq/L)
- CO₂ (23-31 mEq/L)
### Massive Transfusion Protocol

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<tr>
<th>Physician Leader considerations:</th>
<th>Normal lab values:</th>
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#### Massive Transfusion Packs
- Massive Transfusion Packs arrive every 30 min
- Labs in pre-selected tubes/ABG/iStat are drawn every 30 min

#### Resource Box
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- Labs in pre-selected tubes/ABG/iStat are drawn every 30 min
- Post-resuscitation, supplemental product guide:
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  - Fibrinogen < 100, give 2 units pooled cryoprecipitate

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#### OR Nights 2230-0630 and Weekends

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<th>Chemistry</th>
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<tbody>
<tr>
<td>RRT until Heart Team arrives</td>
<td>Put MTP order in HCL</td>
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#### Call the Code Blue 
- Code Blue (Dial 1-6) 
- Notify House Supervisor 829-8268 
- Have Clin Tech obtain MTP cart and Level 1 rapid transfuser

#### Call the iStat from Pump Room 
- Get iStat from pump room 
- Generate patient labels and extra arm band and give to primary assistant

#### After Case, Call EVS for Terminal Cleaning 
- If fibrinogen <100, give 2 units pooled cryoprecipitate

#### When fibrinogen >100, notify Blood Bank to stop thawing pooled cryo

#### Run default labs when tubes arrive, approximately every 30 min, BMP, ionized Ca and Mg

#### Run default labs when tubes arrive, approximately every 30 min. CBC no diff., PT/PTT, INR, fibrinogen

#### Run default labs when tubes arrive, approximately every 30 min. | BMP, ionized Ca and Mg |
# Massive Transfusion Protocol

**PRINCIPLES TO FOLLOW:**

- **1** Primary assistant for every 2 units of PRBC
- **2** Specimen in each bag
- **Hgb** > 10
- **pH** > 7.20
- **pO2** > 40 mmHg
- **pCO2** < 45 mmHg
- **Hct** > 20
- **Platelet** > 50,000

## PHYSICIAN LEADER

- **Determine need for MTP, notify CHARGE RN**
- **Confirm arrival of first 4 units PRBC**
- **Call Cath Lab 829-8501**
- **Provide Transporter with patient labels for blood pick up**
- **Send MTP cart, Level 1 rapid transfuser, and sonosite with a Clin Tech**
- **Notify Anesthesia Tech 829-8608**
- **Notify Heart Team RN and tech on call to respond (bring Stat)**
- **ABG every 30 minutes, call RT for pick-up 829-6504 (give RT Spectralink # for results)**
- **Give 2 units pooled cryoprecipitate if fibrinogen less than 100 (call blood bank to inform them to put in next MTP pack)**

## PRIMARY ASSISTANT

- **Determine ability to release other departments**
- **Deactivate protocol, notify Primary Assistant**

## SURGERY FRONT DESK 829-8347

- **Call Blood Bank 829-8110**
- **Provide Spectralink # for all lab communication (when new primary assistant arrives give Spectralink # to primary RN to call Lab)**
- **Confirm first set of labs drawn by primary assistant (tube packs in MTP cart)**
- **Setup Level 1 Rapid Transfuser and obtain paperwork in MTP cart**
- **Give "Massive Transfusion Packs" automatically sent by Blood Bank every 30 min (save blood bags in room to reconcile unit #s on tally sheet)**
- **Record blood products and labs on MTP tally sheet**
- **Draw labs #1 every 30 minutes, use MTP lab packs in MTP cart, place patient sticker on bag**
- **Instruct transporter that all blood tubes are hand delivered, no tube system**
- **ABG every 30 minutes, call RT for pick-up 829-6504 (give RT Spectralink # for results)**
- **Give 2 units pooled cryoprecipitate if fibrinogen less than 100 (call blood bank to inform them to put in next MTP pack)**

## BLOOD BANK 829-8110

- **Provide Transceptor with patient labels for blood pickup**
- **Send MTP cart, Level 1 rapid transfuser, and sonosite with a Clin Tech**
- **Notify Anesthesia Tech 829-8608**
- **Notify Heart Team RN and tech on call to respond (bring Stat)**
- **ABG every 30 minutes, call RT for pick-up 829-6504 (give RT Spectralink # for results)**
- **Give 2 units pooled cryoprecipitate if fibrinogen less than 100 (call blood bank to inform them to put in next MTP pack)**

## HEMATOLOGY 829-8893

- **Notify AIC (Anesthesiologist in Charge) 829-8391**
- **Notify Physician, and Educator, halt OR activities briefly to determine need for resources**
- **Issue 4 units of PRBC (uncrossmatched if necessary)**
- **Notify Surgery and Cath Lab**
- **After consult with Primary Assistant, if MTP, call Surgery Front Desk 829-8347**
- **Call Cath Lab 829-8501 (0700-1730) to make them aware**
- **Call Transporters 315-4000 (2 needed)**
- **Call Pharmacy 829-8241 to make them aware**
- **When protocol deactivated, notify Surgery & Cath Lab**

## CHEMISTRY 829-8855

- **Run default labs when blood is available, approximately every 30 min. CBC no diff., PT/PTT, INR, fibrinogen**
- **Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received**
- **Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received**
- **Call with lab results to Spectralink # provided**
- **If fibrinogen <100, notify Blood Bank to thaw 2 units of pooled cryoprecipitate**
- **When fibrinogen >100, notify Blood Bank to stop thawing pooled cryoprecipitate**

## RESOURCES BOX

- **Massive Transfusion Packs arrive every 30 min, see red highlighted box**
- **Labs in pre-selected tubes/ABG/Stat are drawn every 30 min**
- **Post-resuscitation, supplemental product guide:**
  - INR > 1.5, give 4 units FFP
  - Platelets < 50,000, give 1 unit platelets
  - Additional PRBC’s as indicated by H+H or rate of hemorrhage
  - If fibrinogen <100, give 2 units pooled cryoprecipitate

- **Physician Leader considerations:**
  - Contact Hematologist
  - Contact IR/GI Lab Surgeon
  - Give Novoseven**
  - Give DDAVP**
  - Give tranexamic acid**
  - **See MTP Med Administration Sheet**

## Normal lab values:

- **Mq (1.6-2.6 mg/dL)**
- **Ionized Ca (1.16-1.32 mmol/L)**
- **ABG pH (7.38-7.42) pCO2 (38.0-42.0 mmHg) pO2 (80-100 mmHg)**
- **Hgb and Hct**
- **Female: Hgb 12.5-15 gm/dL, Hct 36-48%**
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- **PT/PTT (PT: 12.3-14.9 sec) (PTT: 24-37 sec)**
- **INR (0.9-1.1)**
- **Fibrinogen (200-480 mg/dL)**
- **Platelet (140-400)**
- **K (3.3-5.1 mEq/L)**
- **Ca (98-107 mEq/L)**
- **Na (136-145 mEq/L)**
- **CO2 (23-31 mEq/L)**

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**New Version 7.2.18, Last Version 1.9.16**
## Nights & Weekends (Outside OR) 2230-0630

### Resource Box
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### Physician Leader

#### Determination of massive transfusion protocol
- Confirm arrival of first 4 units PRBC to be given by primary assistant as determined by Blood
- Confirm first set of labs drawn by primary assistant (tube packs in MTP cart) Set 1: 1 pink (if no T&C), 1 purple, 1 blue, 2 green

#### Determination intervention within 15 min
- (ex: surgery, embolization, GI Lab, Ethicist [Miriam Cotler 829-8879]) If intervention is Cath lab or surgery, call House Supervisor
- Obtain MTP cart and level 1 rapid transfuser from surgery (not needed in OB)
- Obtain istat from surgery pump room (between OR 11 & 12)
- Call pharmacy 829-8241 to make them aware
- Deactivate protocol, notify Primary Assistant

### Primary Assistant (RRT initial until help arrives)
- Call blood Bank 829-8110 and provide Spectralink # for all lab communication (when primary assists switch to Heart Team RN, give new Spectralink # to primary RN to call lab departments)
- Provide Transporter with patient labels for blood pick up
- Setup level 1 rapid transfuser and obtain paperwork in MTP cart
- Give “Massive Transfusion Packs” automatically sent by Blood Bank every 30 min (save blood bags in room to reconcile unit #s on tally sheet)
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  - *Instruct transporter that all blood tubes are handed, no tube system
- ABG every 30 min, call RT for pick-up 829-6504
  (give RT Spectralink # for results)
- Give 2 units pooled cryoprecipitate if fibrinogen less than 100 (call blood bank to inform them to put in next MTP pack)
- Notify House Supervisor & Blood Bank when protocol deactivated, put MTP blood tally sheet in chart

### Blood Bank
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### Hematology
- Notify Chemistry, Hematology, and Specimen Processing. Provide them with Spectralink # from Primary Assistant

### Chemistry
- Run default labs when tubes arrive, approximately every 30 min. CBC no diff, PT/PTT, INR, fibrinogen
- Locate tubes within 10 min of MTP activation, call Spectralink # if not yet received
- Call with lab results to Spectralink # provided

### Physician Leader considerations
- Give tranexamic acid
- Give Novoseven

### Resource Box
- **ABG** (7.38-7.42) pCO₂ (38.0-42.0 mmHg) pO₂ (80-100 mmHg)
- **HA** (3.6-3.8 mmol/L)
- **Hct**
- **INR** (0.9-1.1)
- **Mg2+** (1.6-2.6 mg/dL)
- **K** (3.3-5.1 mmol/L)
- **CI (98-107 mEq/L)
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- **Mg2+** (1.6-2.6 mg/dL)
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