The 3am Predicament: Development of a Hospital wide Massive Transfusion Protocol
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Background

There were multiple incidents where individuals at a single hospital suffered major blood loss, which lead to a review of blood transfusions and utilization processes. This review demonstrated the need to improve communication among staff regarding blood product selection, allocation of products and process for administration. The BloodCenter of Wisconsin and Wheaton Franciscan Healthcare-All Saints utilized a value-stream analysis to identify a desired process when dealing with massive blood loss. A multidisciplinary team was created to develop a hospital-wide Massive Transfusion Protocol which included: guidelines, processes, and evaluation in line with Lean principles. The purpose of this project was to standardize care of patients experiencing massive blood loss utilizing evidence based practice.

Protocol Development

Protocol Development: A multi-disciplinary team from laboratory and clinical units with high blood utilization (ICU, OR, ER, L&D) was formed to develop a protocol for massively bleeding patients. Foundational work for development of the protocol to develop a definition and sequence of blood products/lab draws was completed by reviewing research and best practices. The foundation was reviewed and approved by the physician team from anesthesia, surgery, obstetrics, and the Chief Medical Officer before further work was completed on the protocol. The team aligned the protocol closely with other emergency response policies and developed an order set, flow sheet, definitions of roles and responsibilities, and algorithms for nursing, other providers and blood bank. A bright green packet containing most of these items would be placed on the crash cart for ease of visibility. A mock drill of the new protocol was performed to see if there was anything the team missed. Meetings were conducted with various departments to refine all roles. A video of the Massive Transfusion Protocol was created and included in the learning link for clinical staff education. A poster and a pocket card for clinical staff were created and distributed at staff meetings in highest use areas (OR, ICU, L&D and ER) to provide additional education prior to the Go-Live date of March 2015.

Lessons Learned

<table>
<thead>
<tr>
<th>Situation</th>
<th>Lesson Learned</th>
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</thead>
<tbody>
<tr>
<td>There was inaccurate perception of interdepartmental workflow</td>
<td>Nursing demonstrated an understanding of lab policies and regulations as did lab of bedside care.</td>
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<tr>
<td>Nursing had limited understanding of blood product preparation</td>
<td>Nursing learned how blood bank functions i.e. plasma takes 30-40 min to thaw which is why it is not received quickly.</td>
</tr>
<tr>
<td>Provider and Leadership participation is key in developing a hospital wide protocol</td>
<td>Involvement of leadership/providers early provides support when problems are identified.</td>
</tr>
<tr>
<td>Essential resources and availability contribute to effective process</td>
<td>Understand the availability of equipment (i.e. point of care testing, blood warmers) and amount of personnel needed (i.e. staffing on nightshift is less than days)</td>
</tr>
<tr>
<td>Lean Methodology</td>
<td>Value Stream Analysis was beneficial to staff in starting the project by determining desired future state.</td>
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• Video –
  (will bring day of conference)
# MASSIVE TRANSFUSION PROTOCOL (MTP)
## STAFF EDUCATION

### PURPOSE

Standardize care of patients experiencing massive blood loss utilizing evidenced based practice.

### Objective

MTP identifies the roles and responsibilities between staff, improves communication, and outlines the process of providing blood products in an efficient manner.

### Definition

Replacement or loss of patient’s entire blood volume (8-10 units of RBC) within 24 hours.

### Criteria

A patient requiring massive transfusion is any hemodynamically unstable patient who meets one or more of the following:

- Acute administration of 4-5 RBC units in 1 hour and anticipation of ongoing usage of blood components
- Ongoing blood loss exceeding 150ml/minute
- Massive bleeding i.e. trauma, obstetric hemorrhage, Gastrointestinal or esophageal bleeds

### Sequence

<table>
<thead>
<tr>
<th></th>
<th>#1</th>
<th>#2</th>
<th>#3 (repeat as needed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC</td>
<td>6 units</td>
<td>4 units</td>
<td>4 units</td>
</tr>
<tr>
<td>Plasma</td>
<td>*</td>
<td>6 units</td>
<td>4 units</td>
</tr>
<tr>
<td>Platelets</td>
<td>* If available</td>
<td>1 unit</td>
<td>1 unit</td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>*</td>
<td>Can be given if Fibrinogen ≤150</td>
<td>10 pooled (2 units)</td>
</tr>
</tbody>
</table>

**Sequence may be adjusted by blood bank based on availability of products (plasma/platelets) and number of recent RBC transfusions.**

### Upon activation

- Type and Crossmatch
- Hemogram
- CMP
- ABG
- Coagulation (PT,aPTT,INR)
- Fibrinogen
- Ionized Calcium
- Magnesium
- Lactic Acid

### After 2nd sequence and each sequence until MTP deactivation

- Hemogram
- CMP
- ABG
- Coagulation (PT,aPTT,INR)
- Fibrinogen
- Ionized Calcium
- Magnesium
- Lactic Acid

### Communication is key!!

- Provider orders initiation of MTP
- Clinical team activates MTP via x7777 (except OR)
- Roles are defined in the patient room:
  - RN Caring for Patient
  - Team Leader/Communicator
  - Recorder/Documenter
  - Runner (identified by Communicator)
- Each role performs their tasks
- Blood products and paperwork will accompany patient with location change
- Provider decides when to deactivate the protocol. Notify Blood Bank of deactivation and return any unused blood products

**Hospitals with a Massive Transfusion Protocol have better outcomes**