Blood Stocks Management

Southeastern Area Blood Bankers
BloodTrack Installations

- BloodTrack monitors
- 1 blood unit every
- 60 seconds of the day
- 365 days a year
- 600,000 units a year…
- BloodTrack installations
- 85 sites
- 195 distinct locations
- 50,000 trained users
BloodTrack™ Courier*
Blood Unit Tracking System

- Tracks Movement of Blood Units
- In/Out of Refrigerators throughout the Health System:
  - Fast and effective system
  - Easy to operate system
  - Provides complete audit trail
  - Ensures patient safety
  - Controls inventory
  - Prevents unauthorized access

*FDA CLEARED
BloodTrack Hemosafe

- Vending machine for blood
- Can be used as your Issue Fridge
- Securely dispenses blood in remote locations
- Allocates blood units on demand
- Prints transfusion tags (compatibility labels)
- Tracks inventory
- Full electronic audit trail
- Interfaced or Stand-Alone
- Reduces Blood Usage and Waste
How BloodTrack Hemosafe Works

• Summary
1. Load the Refrigerator
2. Dispense Allocated (crossmatched) Blood, and/or
3. Dispense Previously Unallocated Blood
4. Monitor status from the Blood Bank
5. Generate Reports
1. Load the Hemosafe

- Periodically load the Hemosafe with allocated (crossmatched) or unallocated blood units
- Unit position assigned by Blood Track Manager
2. Dispense Crossmatched Blood

- Hemosafe positions the compartment to give access to only the blood unit for the patient identified*

- * Patients are identified by barcoded pickup slip or selected from list via touch screen
3. Dispense Previously Unallocated Blood

• Hemosafe can dispense blood at remote locations, on demand.

• Hemosafe checks the Blood Bank LIS*:
  • Is the patient eligible for electronic crossmatch?
  • If so, what is the patient’s blood type?
  • Is there any blood of that type in the fridge?

• Hemosafe will give access to the oldest unit of the patient’s blood type

• * Non-interfaced mode available
3. Dispense Previously Unallocated Blood

Auchinleck, Geof (0130) is eligible for Remote Allocation until 16-Nov-2006.

There are 2 units of A Neg blood available at this location.

G062 504 177 071 1 Red Cells
G062 604 247 845 1 Red Cells

Do you want to allocate a unit of blood?
4. Monitor Status from Blood Bank

- Monitor the inventory levels of the refrigerator

<table>
<thead>
<tr>
<th>Storage</th>
<th>Last Heard</th>
<th>Labels</th>
<th>A Pos</th>
<th>A Neq</th>
<th>B Pos</th>
<th>B Neq</th>
<th>AB Pos</th>
<th>AB Neq</th>
<th>O Pos</th>
<th>O Neq</th>
<th>XM</th>
<th>Unusal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Bank Lab</td>
<td>3 minutes</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>48</td>
<td>27</td>
</tr>
<tr>
<td>A&amp;E Fridge</td>
<td>3 minutes</td>
<td>37</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>JW Recovery Room Fridge</td>
<td>3 minutes</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Cardiac ICU Fridge</td>
<td>3 minutes</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

- Set automatic “low stock” warning levels
4. Monitor Status from Blood Bank

Hemosafe sends Alerts to BloodTrack Manager in Blood Bank if a problem occurs

- Example Alerts:
  - Expired Unit
  - Exceeded Transport Time
  - Exceeded Storage Time
  - Passed Reservation Date
  - Unsuitable for Use
  - Unknown Unit
  - Wrong Patient
  - Older Blood Available
  - Unauthorized User
  - Emergency Access triggered
5. Generate Reports

**Blood Units about to Expire**

<table>
<thead>
<tr>
<th>Blood Unit</th>
<th>Product</th>
<th>Expiry Date</th>
<th>Location</th>
<th>Blood Group</th>
<th>Patient</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>G053 604 716 306</td>
<td>RED CELL IN ADD</td>
<td>04-Apr-2006</td>
<td>Issue Fridge</td>
<td>A Pos</td>
<td>Clark, Cindy</td>
<td>Available</td>
</tr>
<tr>
<td>G053 604 737 436</td>
<td>RED CELL IN ADD</td>
<td>04-Apr-2006</td>
<td>Issue Fridge</td>
<td>B Pos</td>
<td>Available</td>
<td></td>
</tr>
<tr>
<td>G053 604 125 305</td>
<td>RED CELL IN ADD</td>
<td>08-Apr-2006</td>
<td>Issue Fridge</td>
<td>B Pos</td>
<td>Available</td>
<td></td>
</tr>
<tr>
<td>G053 604 128 857</td>
<td>RED CELL IN ADD</td>
<td>08-Apr-2006</td>
<td>Issue Fridge</td>
<td>A Neg</td>
<td>Available</td>
<td></td>
</tr>
</tbody>
</table>

**Real-time Refrigerator Inventory**

<table>
<thead>
<tr>
<th>Blood Unit</th>
<th>Product</th>
<th>Expiry Date</th>
<th>Location</th>
<th>Blood Group</th>
<th>Patient</th>
<th>Dereservation Date</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>G053 604 298 267</td>
<td>RED CELL IN ADD</td>
<td>04-Nov-2014</td>
<td>Issue Fridge</td>
<td>AB Neg</td>
<td>Jones, John</td>
<td>25-Feb-2006</td>
<td>Not Scanned In</td>
</tr>
<tr>
<td>G053 604 737 450</td>
<td>RED CELL IN ADD</td>
<td>04-Nov-2014</td>
<td>Issue Fridge</td>
<td>O Pos</td>
<td>Abbott, Nella</td>
<td>25-Feb-2006</td>
<td>Already In Circulation</td>
</tr>
<tr>
<td>G053 604 125 323</td>
<td>RED CELL IN ADD</td>
<td>01-May-2014</td>
<td>Issue Fridge</td>
<td>A Neg</td>
<td>Available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Unfated Blood Units**

<table>
<thead>
<tr>
<th>Blood Unit</th>
<th>Product</th>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>G053 604 298 235</td>
<td>RED CELL IN ADD</td>
<td>Issue Fridge (Blood Bank)</td>
<td>23-Feb-2006 16:11:48</td>
</tr>
<tr>
<td>G053 604 298 267</td>
<td>RED CELL IN ADD</td>
<td>Issue Fridge (Blood Bank)</td>
<td>10-Mar-2006 14:03:45</td>
</tr>
<tr>
<td>G053 604 295 124</td>
<td>RED CELL IN ADD</td>
<td>Issue Fridge (Blood Bank)</td>
<td>23-Feb-2006 15:31:11</td>
</tr>
<tr>
<td>G053 604 716 306</td>
<td>RED CELL IN ADD</td>
<td>Issue Fridge (Blood Bank)</td>
<td>10-Mar-2006 14:01:20</td>
</tr>
</tbody>
</table>
The Complete BloodTrack System

More Than Just Hemosafe
Beyond Hemosafe

• BloodTrack System also includes:
  • BloodTrack OnDemand Software
  • BloodTrack Manager Software
  • BloodTrack Enquiry Software
  • BloodTrack AutoFate Software
  • BloodTrack SafeTx Handhelds
BloodTrack HemoNine

- For smaller areas, use HemoNine for remote allocation (e.g. OR)
- 9 compartment locking refrigerator
- 1 compartment for each blood group (A+, A- ...)
- 1 compartment for crossmatched units
- Each compartment’s locks controlled by BloodTrack kiosk
BloodTrack Courier

- To simply track blood use BloodTrack Courier
- Existing Refrigerator + locks controlled by BloodTrack kiosk
- Identify users, increase security, monitor inventory, fate of unit
- Example: Use in the ER to control release of OPos (or ONeg) units
Oxford BloodTrack System

John Radcliffe Hospital

Blood Bank

BloodTrack Server

BloodTrack Manager

7 BloodTrack Courier Kiosks

1 Hemosafe Nine

Churchill Hospital

Horton Hospital

Nuffield Hospital
Pre and Post Implementation Audit

- Audit done on Cardiac Surgery Unit:
  - Criteria
  - Number of red cells used
  - Number of red cells stocked
  - Time after request for red cells to be made available
  - Time taken by laboratory staff time to issue blood
  - Time taken by OR staff to collect blood
  - Time taken by OR staff to request and receive blood
  - Visual audit to measure staff compliance
Key Findings for Remote Allocation

- Significant reduction in blood usage
- Blood available immediately
- Laboratory staff time savings
- Clinical staff time savings
- Increase in patient safety
### Results for Blood Usage

<table>
<thead>
<tr>
<th>Cardiac Surgery</th>
<th>Before</th>
<th>After</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood usage</strong></td>
<td>407 units</td>
<td>197 units</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Units used per Patient</strong></td>
<td>3.5 units</td>
<td>1.6 units</td>
<td>54%</td>
</tr>
<tr>
<td><strong>Units issued but not used</strong> (used/issued)</td>
<td>42% (64/151)</td>
<td>20% (18/91)</td>
<td>52%</td>
</tr>
</tbody>
</table>
### Other Benefits

<table>
<thead>
<tr>
<th>Cardiac Surgery</th>
<th>Before</th>
<th>After</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Availability</strong></td>
<td>23 min</td>
<td>1 min</td>
<td>96%</td>
</tr>
<tr>
<td><strong>OR staff time</strong></td>
<td>24 min</td>
<td>7 min</td>
<td>71%</td>
</tr>
<tr>
<td><strong>Post Visual Audit</strong></td>
<td></td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
RFID and Barcodes

• Optional RFID module
  • Entire suite can read RFID tags and barcodes at the same time
    • RFID Hemosafe
    • RFID Courier Kiosk
    • RFID Bedside Tx
  • RFID transfusion tags containing patient info are printed in Blood Bank or at fridge
  • Read tag throughout the process for full audit trail
RFID at the Bedside

- Scans donor label barcodes
- Reads RFID transfusion tags
- Reads RFID caregiver IDs
- Reads RFID patient wristbands

Advantages
- Does not disturb the patient
- Identifies caregiver through isolation gowns