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| --- | --- | --- | --- | --- |
|  | | **Blood Product Inventory Protocol**  **Formerly: Blood Orders Protocols**  BB.Protocol.1013.9 | **Dept:** | 324311 |
| **Dept Name** | Blood Bank |
| **Effective Date:** |  |
| **Revised Date:** |  |
| **Name & Title**: CLIA Laboratory Medical Director | | | **Contact:** | Julie H. Simmons |
| **Signature:** | G. Pomper | | **Date:** | **3/20/20** |

**1. General Protocol Statement:**

1. **Purpose:** Blood products will be ordered routinely and as special orders to provide for the needs of patients requiring transfusion at Wake Forest Baptist Health and associated facilities.

**B.** **Responsible Department/Scope:**

1. Owner/Implementer: Julie H. Simmons/Christina Warren
2. Protocol prepared by: Julie H Simmons

iii Who performs protocol: Department staff/management

1. **Definitions:**

ARC American Red Cross

OB One Blood (formerly Community Blood Center of the Carolinas (CBCC))

NEO Neonate

Mannitol free CPDA-1 and AS-3 anticoagulants do not contain mannitol

Connect Online ordering system for ARC

Dr. Otaki Pediatric cardiac surgeon. Intraoperative blood requirements: blood less than 5 days old and mannitol free; when patient is not in OR blood can be up to 10 days old and mannitol free.

DBR Davie Medical Center Bermuda Run

Optimal Inventory The number of AVAILABLE units should be no less than the optimal level on the order sheet.

If the number of AVAILABLE units is less than the optimal level, then order to the optimal level.

**D. Sections**:

1. Guidelines for Ordering Blood and Blood Components
2. Ordering Routine Blood Products
3. Orders for Special Blood Products (Red Blood Cells and Granulocytes) and for Specific Patient Needs
4. Blood Shortage
5. General Guidelines Protocol
6. Maintaining an Inventory of Group O Frozen Red Blood Cells for use during Shortages
7. Special Blood Product Orders/Instructions for Special Antigen Folder
8. Autologous and Directed Donation
9. Inventory Other Facilities
10. General Guidelines
11. Requests from Davie Bermuda Run
12. Blood Products Sent from Other Facilities with Transferred Patient
13. Blood Products Sent with Patient to Other Facilities from WFBH Blood Bank or Air Care Transport
14. Patient Blood Orders
15. Excessive Requests for Blood Products or Questionable Orders
16. Jehovah’s Witness or Patients Refusing Transfusion

**2. Protocol:**

**I. Guidelines for Ordering Blood and Blood Components**

1.0 All blood products ORDERED must be leukoreduced.

1.1 Whole Blood will be the exception to leukoreduction.

2.0 Blood products should only be ordered from blood centers that have been qualified by management.

* 1. Sources should be qualified as acceptable prior to shipment of blood products.
  2. Facility should be accredited by the AABB or equivalent accrediting body, and certified by the Centers for Medicare and Medicaid Services (CMS), and registered and licensed by the Food and Drug Administration (FDA).
  3. Notify management when a new blood supplier is utilized.
  4. To qualify a blood supplier refer to the QP manual:
  5. Facility License number (needed to ship across state lines)
  6. Certified by CMS and Facility Registration number (FDA number)
  7. Accrediting agency
  8. Facility Circular
  9. Information can be taken verbally or faxed.
  10. It is preferred to have the information prior to shipment but the urgency of the need must be balanced with the ability to obtain the information. Consult with management if questions.
  11. Document Information on the Qualifying a Blood Supplier Form and give to management for filing.

*Refer to Attachment 1: Qualifying a Blood Supplier*

3.0 Blood Sources

3.1 Blood is routinely ordered from the American Red Cross (ARC) in Charlotte. There is a written agreement

with the ARC and information has been received to qualify them during this process.

a. If blood or blood products are needed, order online at <https://arc.bloodhub.com>

*Refer to routine manual: ARC Online Ordering System, BB.R.1047*

1. During intranet, internet or ARC Connect downtime call 1-800-532-0025 or fax the Blood Products Fax Order Form to 1-800-708-2623. NCBH account number is 2420.

*Refer to Attachment 4: Blood Products Fax Order Form*

1. The American Red Cross will try to fill most stock orders out of Charlotte.

* During intranet or ARC Connect downtime. Call 1-800-532-0025 or fax to 1-800-708-2623.
* *Refer to Attachment 14: Red Cross Emergency Phone Numbers*

d. Antigen negative, special order blood is also to be ordered online at <https://arc.bloodhub.com>

*Refer to Section III: Orders for Special Blood Products (Red Blood Cells and Granulocytes) and for Specific*

*Patient needs.*

e. The American Red Cross determines from what center blood products will be sent.

f. Blood may be available out of the ARC Winston Salem Center weekdays from 7am to 5pm.

3.2 Blood is also ordered from One Blood (OB), formerly Community Blood Center of the Carolinas (CBCC),

and Blood Connections Incorporated (BCI), when ARC is not able to fill orders in a timely manner.

1. Add to Blood Bank Inventory Sheet

*Refer to Attachment 2: Blood Bank Inventory Sheet*

3.3 Blood Buy is a third party vendor that works with certain blood centers and hospitals.

1. Only Designated techs and management can order. Once an order has been placed an email will be sent to [BBFRONT@wakehealth.edu](mailto:BBFRONT@wakehealth.edu) to inform BB of the pending arrival.
2. All Blood Buy blood centers have been qualified by management. If one is received and it is not available in SCC, leave for management to review and qualify.

3.4 Blood may be needed from other sources during times of severe shortage or to meet specific patient needs

such as filling requests for units with rare antigen types.

1. The following are qualified blood centers that may be contacted to supply blood products.

|  |  |
| --- | --- |
| **Blood Center** | **Phone / Fax #s** |
| Blood Center of Wisconsin | 414-937-6089 |
|  |  |
| Blood Connection, Inc |  |
| - Product Order | 864-751-3017 |
| - Fax | 864-255-9514 |
|  |  |
| One Blood Charlotte | 704-972-4742 |
| One Blood Greensboro | 336-207-2896 |
| Florida Blood Services | 727-568-5433 |
|  | Ext. 1113 or 1116 |
| Heartland Blood Center - Illinois | 630-892-7091 |
| Hoxworth Blood Center - Univ. of Cincinnati | 513-558-1244 |
| * Fax | 513-558-1253 |
| Memorial Blood Center (Minnesota) | 651-332-7108 |
| Blood Buy | Website only:  <https://exchange.bloodbuy.com> |
|  |  |

4.0 Optimal levels have been established for blood/blood components.

*Refer to Attachment 2: Blood Bank Inventory Worksheet.*

1. Maintain levels of blood/blood components at or above the optimal established levels.
   1. Notify management when inventory below optimal levels and unable to obtain inventory from ARC or other blood suppliers.

6.0 Print Blood inventory on *each* shift.

|  |  |  |
| --- | --- | --- |
| Shift | Assigned bench | When |
| 1st | XM 1 | 0600-0800 |
| 2nd | XM 1 | 1400-1415 |
| 3rd | Front Desk | 2100-2130 |

6.1

6.2 The Blood inventory report is a tool to use for determining the number of units to order. The assigned tech needs to physically evaluate the inventory in the uncrossmatched refrigerator also to determine that the optimal level is present and available (or in transit if standing order has not arrived).

a. As a quick and easy guideline, each shelf when full holds approximately 40 units. Do not include the

antigen negative units in your estimate.

6.3 Each shift is responsible for rotating RBC stock so that the shortest expiration dates are in the front and are used first.

a. Crossmatched units are grouped by BBID number.

7.0 Complete Frozen Component Inventory on second shift on the Blood Bank Inventory Worksheet at the designated time stated in 6.1.

*Refer to Attachment 2: Blood Bank Inventory Sheet*

8.0 Standing Order of Leukoreduced Packed Red Blood Cells

8.1 There is a standing order of Packed Red Blood Cells for stock and for neonate use (NEO).

*Refer to Attachment 3: Standing Orders for Wake Forest Baptist Health.*

8.2 ARC may modify, change or cancel the standing order depending on availability.

8.3 The standing orders may be split and/or sent by special couriers.

8.4 Changes to the delivery schedule should be documented on the Blood Bank inventory sheet.

a. Standing orders can be requested on an earlier shuttle or by stat courier if needed.

8.5 Blood Products (including Standing Orders) from ARC usually come on the following shuttles:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Shuttle | Days of Week | Order by | Approximate Arrival Time | Shuttle Leaves ARC |
| Shuttle B | Sat,Sun,Mon | 10:00 PM | 5 AM | 2 AM |
| Route 2 | Mon-Fri | 10:00 PM | 7 AM | 2 AM |
| Route 2 (return) | Mon-Fri | 2:30 AM | 10 AM | Goes by Winston center |
| Shuttle A | Mon-Fri | 12:00 PM | 4 PM | 2 PM |
| 10pm Shuttle | Mon-Fri | 2:30 PM | 10 PM | 8 PM |

1. Blood and blood products that are NOT stat, courier will be sent on the next available shuttle.
2. Call Blood Order Entry (800-532-0025) if any questions on Shuttles.

8.6 Changes to a Standing Order must be done by phone.

a. Changes cannot be made in the ARC Connect online ordering system.

b. Standing orders for Liquid Plasma/Whole Blood must be cancelled 5 days in advance.

c. Standing orders for Routine products (Red Cells/Platelets) must be cancelled 12 hours in advance.

d. Document Date and Time changes are made on Blood Bank Inventory worksheet.

8.7 Standing Orders for Wake Forest Baptist Health

*Refer to Attachment 3: Standing Orders for Blood Products*

9.0 Whole Blood (low titer) Group O

9.1 Whole Blood (low titer) Group O is on a standing order.

*Refer to Attachment 3: Standing Orders for Blood Products*

9.2 Low titer Group O whole blood will be used for adult TRAUMA patients that meet the established age/sex

criteria.

1. Males: Age 17 and older
2. Females: Age 51 and older

9.3 Low titer Group O whole blood should be received as LEUKOCYTE REDUCED with a platelet sparing filter.

a. Notify management if NON LEUKOCYTE REDUCED is received.

9.4 Low titer Group O whole blood will be used for 14 days from day of collection.

9.5 A ‘tie tag’ will indicate the ‘Best Used by Date’ (14 days from date of collection) for Whole Blood.

a. Determine the date of collection with the ‘Blood Expiration Date Calculator’ wheel or the invoice and

count 14 days with day of collect as ‘Day 0’ to determine the 14 day ‘best used by’ expiration date

9.6 Whole Blood will be packed and used as packed cells if not transfused by day 14.

9.7 The plasma expressed in making the packed cells will be discarded physically and in SCC.

9.8 The packed cells disposition will depend on the category of low titer Group O whole blood received.

a.

|  |  |  |
| --- | --- | --- |
| Product – Packed cell | Patient Population that CAN receive | Comments |
| Leukocyte Reduced (platelet sparing) | Anyone | Put into general inventory |
| NON Leukocyte Reduced | MTP TRAUMA patients | Load in BioFridge.  Notify management if NON Leukocyte reduced. |

10.0 Platelets arrive as standing order. Arrival times can vary depending on release times. The Blood Center will notify staff if the time of delivery changes and expiration dates of platelets.

10.1 Platelet inventory is counted by the technologist assigned to component prep on each shift and recorded on the Blood Bank Platelet Inventory Worksheet.

*Refer to Attachment 5: Blood Bank Platelet Inventory Worksheet.*

10.2 When accepting platelets, note the expiration dates of the platelets being sent. If expiration dates are not acceptable ask the Blood Center to send "better" dates if available.

10.3 For ARC shipments:

a. The ARC standing order must be cancelled 12 hours in advance.

10.4 Special order platelets are ordered at the request of the Medical Director and/or pathology residents.

10.5 Special order platelets are filled by the ARC pheresis department:

1. Orders are placed online at <https://arc.bloodhub.com>
2. For Questions contact the pheresis department at ARC at 1-800-350-0556 or 1-704-347-8395.
3. Special order platelets include:
4. HLA matched
5. Platelets crossmatched
6. When placing special order platelets during Internet or ARC Connect downtime use the special order form. Blank copies are kept in the back of the special order platelet notebook kept in component prep.

*Refer to Attachment 6: Platelet Specific Order Form.*

10.6 The tech assigned to component prep is responsible for monitoring active special platelet orders and to have the medical director and/or pathology resident reevaluate orders.

11.0 All blood/blood component orders need to be documented on the Blood Bank Inventory Worksheet, with the exception of platelets.

11.1 Document tech initials, time, and Connect order # (or name of the person arranging the order if a phone call is needed) from the American Red Cross or other blood supplier.

11.2 Document how the products will be arriving (i.e. Stat courier, which shuttle, etc.)

11.3 Any additional information regarding blood/blood components should be written on the inventory sheet.

*Refer to Attachment 2: Blood Bank Inventory Sheet*

12.0 When blood level is below optimal or anticipating usage at or above the normal that will deplete normal inventory, orders should be placed STAT.

12.1 The Winston Center Red Cross can fill orders during normal business hours (Monday –Friday, 7am to 5pm).

1. The Winston Center Red Cross **cannot** accommodate large orders.
2. Delivery on Time (DOT) is the primary courier used for Stat pickups (855-933-6368).
3. STAT ASAP couriers (Rhonda) is available if other options are not.
4. Document on the BB Inventory Worksheet including which courier and time courier called.

12.2 All Employees on all shifts are responsible for ensuring that blood levels do not drop below optimal levels.

13.0 Emergent orders for blood products should be requested for arrival by the most expedient method.

13.1 STAT (from supplier) couriers may be requested with an estimate time of arrival at WFBH.

13.2 Other couriers (DOT) should be checked to see if they can deliver product more quickly.

13.2 WFBH Incident command center may be able to provide a courier if needed when WFBH has activated the command center such as during Severe Weather.

13.3 Management should be immediately consulted when there is an emergent need for blood.

14.0 Massive Trauma pack is available 24/7 at the Winston Salem Red Cross.

14.1 The Massive Trauma pack available has the following components:

a. 25 Group O positive packed cells

b. 25 Group O negative packed cells

c. 2 Platelet pheresis

14.2 The Massive Trauma pack should be ordered if a 2nd BioFridge has gone out on a massive and inventory is

not above optimal level.

14.3 The Red Cross order number should be called to request the Massive Trauma pack.

a. The entire pack can be received or only part of the pack can be received.

i.e. You can request only the Group O positive packed cells be sent.

b. Additional product may be ordered to come out of Charlotte or Durham if needed.

c. The Red Cross will call to notify when the products are ready to leave the Winston Salem center.

d. Document the MTP request at the bottom of the MTP log.

* + Date/Time Requested
  + Tech Requesting
  + What was ordered
  + Red Cross staff
  + Date/Time Received
  + Tech Receiving
  + Time from Order to Receipt
  + Comment on any additional information, i.e. courier lost, no parking

1. Blood order placement during times of power or phone outages or intranet/internet service disruption.

15.1 During intranet, internet or ARC Connect downtime:

1. Call 1-800-532-0025 or fax Blood Products Fax Order Form to 1-800-708-2623.
2. Document on BB Inventory Worksheet and place faxed form on clipboard with worksheet.

*Refer to Attachment 14: Red Cross Emergency Phone Numbers*

15.2 Black phone is available and may be used if working.

*Refer to Policies: Power Failure Polices*

16.0 Granulocytes are ordered only with the approval of the Medical Director.

16.1 Granulocytes are not orderable in the ARC online Connect system.

17.0 CDIE's-ARC Credit Due if Expires

17.1 CDIE (Credit due if Expires) are products that are sent with limited shelf life thus Red Cross or other supplier will issue a credit if they are not used. CDIE products are *only* sent by ARC with technologist approval.

17.1 The following qualify as ARC only CDIE units.

1. Red blood cells < 10 days until expiration
2. Platelets < 36 hours until expiration
3. CDIE will be indicated in the LIS

18.0 Rarely a unit of packed red cells containing antibody (ies) may be offered by a blood supplier.

18.1 Medical Director will routinely only accept Group O negative donors with anti-D antibodies.

18.2 Consult with management prior to accepting any blood groups with antibody (ies).

19.0 Any issues with blood/blood products inventory shall be recorded on the BB Monitor 1.

19.1 Orders that can only be partially filled should be documented on BB Monitor 1 if product must be

obtained from another blood supplier.

19.2 Document instances that the standing order cannot be filled on BB Monitor 1 so that credit can be

obtained if purchased from another blood supplier.

20.0 A member of the patient clinical team will be notified of any delays in obtaining products for patients with special

order needs.

20.1 This includes HLA matched platelets, CMV negative product, antigen negative product or any

product that cannot be obtained for the day of transfusion.

20.2 Critical patients or patients with urgent orders that cannot be filled with special product will be given to

the Medical Director or designee to evaluate and consult with clinical team to determine the best course

of action.

1. Leukoreduced Blood and Platelet Products
   1. All blood/blood products should be sent from the blood supplier as pre-storage leukoreduced.
   2. Frozen units that have not been pre-storage leukoreduced do not require a leukocyte reduction filter set after deglycerolization.
   3. A leukocyte reduction filter is not required for autologous blood.
   4. Notify management when non-leukoreduced liquid packed cells or platelet products are received into inventory.
   5. SCC will alert the tech when a non-leukoreduced product (platelet, red cells) are brought into inventory.
   6. Flag the non-leukoreduced blood product with orange sticker that reads "NOT LEUKOCYTE REDUCED." Refer to example:

**NOT LEUKOCYTE REDUCED**

* 1. Prestorage leukoreduced blood and platelets are a safe alternative to CMV seronegative units for reducing

transfusion transmitted CMV infection

* 1. When CMV negative blood is requested, CMV negative blood will be ordered from the blood supplier on

a case by case basis pending MD review.

* 1. During the review interval, CMV negative blood will be issued, if available, from the general inventory.

1. If none is available, then leukoreduced blood products will be issued to avoid delay.
2. Non-conforming Blood Products
   1. Non-conforming blood products are defined as products that are acceptable with appropriate

documentation from the blood supplier and include the following:

1. Biohazard Autologous Donations
2. NAT testing not done for autologous donations
3. Confirmatory testing pending for autologous donations
4. Units tested from an alternative source (segments)
5. Historical Typing for antigens
6. Exceptional Release.
   1. A Deviation from Standard Procedure will be necessary.

*Refer to QP manual: Deviations, Nonconformance, and Adverse Reactions*

* 1. Management must be notified anytime there is potential receipt of a non-conforming product.
  2. Documentation will be kept on file by the manager/designee.

**II. Ordering Routine Blood Products**

* 1. Print Inventory of Blood/Blood Components in SCC.

1.1 The following inventories are printed per shift:

1. **First Shift**: Total Blood/Blood Product Inventory Summary Totals

**b. Second Shift**: Total Blood/Blood Product Inventory Summary Totals

**c. Third Shift**: Total Blood/Blood Product Inventory Summary Totals

1. Transfer inventory available totals to the worksheets
   1. RC, IRC, Plasma and Cryo go on the Blood Bank Inventory Worksheet

*Refer to Attachment 2: Blood Bank Inventory Sheet*

* 1. Platelets go on the Blood Bank Platelet Inventory sheet.

*Refer to Attachment 5: Blood Bank Platelet Inventory Form*

1. Red Cell Inventory:

3.1 Check for any standing order products coming on your shift or next shift

a. Record on BB Inventory Worksheet under S.O. (Standing Order)

3.2 Add the standing order to the total inventory available and record in the Total column.

3.3 Quickly calculate the number of units AVAILABLE on the shelf using the criterion of 40 units per full shelf.

3.4 Compare the number available to the Optimal levels.

3.5 First shift counts and records Hemoglobin S negative stock on worksheet

a. Order as needed keeping in mind that the standing order of sickle negative blood arrives on Wednesdays.

3.6 Order as needed thru out all shifts.

3.7 Guideline:

a. The number of AVAILABLE units should be no less than the optimal level on the order sheet.

b. If the number of AVAILABLE units is less than the optimal level, then order to the optimal level.

1. Platelet Inventory

4.1 Review Inventory levels from BB Platelet Inventory sheet

4.2 Review Min and Max requirements as listed on form depending on time of day.

4.3 Each shift CP tech will evaluate the platelet need and order as needed.

a. The standing order of platelets should routinely arrive at 4pm.

b. Cancellation of the standing order should be made 12 hours prior so take into consideration the expiration

date of inventory prior to cancelling or cutting the standing order.

* Document on the BB Platelet Inventory Form

*Refer to Attachment 5: Blood Bank Platelet Inventory*

1. Plasma Inventory Guidelines

5.1 Subtract pheresis patient usage for the next day from the inventory total on the worksheet.

5.2 Record products on BB Inventory Worksheet

*Refer to Attachment 2: Blood Bank Inventory Sheet*

* 1. Order as needed to keep inventory at optimal levels listed on worksheet.
  2. Order as needed thru out all shifts.

1. Group AB Fresh Frozen Plasma (FFP)

6.1 A standing order of 6 Group AB FFP arrive monthly on the 2nd Tuesday of the month. These are used to maintain

1 thawed AB plasma available in Blood Bank at all times for neonates.

*Refer to Attachment 3: BB.FORMS. 5400.6: Standing Orders for Blood Products*

1. Liquid Plasma

7.1 There is a standing order of Group A liquid plasma for adult traumas.

7.2 There is a standing order of Group AB liquid plasma for pediatrics (not neonates).

*Refer to Attachment 3: BB.FORMS. 5400.6: Standing Orders for Blood Products*

8.0 Cryo Inventory (pooled and single)

8.1 Record on Inventory Worksheet.

*Refer to Attachment 2: Blood Bank Inventory Sheet*

* 1. Order as needed to keep inventory at optimal levels listed on worksheet.

*Refer to Attachment 3: BB.FORMS. 5400.6: Standing Orders for Blood Products*

1. Red Cells, Plasma, Cryo and Platelets are usually ordered from ARC.
   1. Primary method is thru their internet website: <https://arc.bloodhub.com>

*Refer to Routine Procedure Manual: ARC Online Ordering System Procedure: BB.Routine.1047*

* 1. Standing orders cannot be adjusted on the website, only by phone
  2. During intranet or ARC Connect downtime call 1-800-532-0025 or fax the Blood Products Fax Order Form to 1-800-708-2623. WFBMC account number is 2420.

*Refer to Attachment 14: Red Cross Emergency Phone Numbers*

* 1. Products can be ordered from other suppliers when ARC cannot supply what is needed.

1. OB can be reached at 1-704-972-4742.
2. BCI can be reached at 1-864-751-3017.
3. For a full list of blood suppliers
4. Record routine blood orders on BB Inventory worksheet

*Refer to Attachment 1: Blood Bank Inventory worksheet*

1. For special patient orders fill out a blood order form and place on bridge

*Refer to Attachment 7: Blood Order Form (non ARC orders)*

1. Frozen Group O units for inventory

10.1 Units are to be ordered online at <https://arc.bloodhub.com>.

* 1. Units are ordered as Standard Order.
  2. Request from ARC any historical antigen types that are available for the frozen units.

**III. Orders for Special**

**Blood Products (Red Blood Cells and Granulocytes) and for Specific Patient Needs**

* 1. Notification of special blood orders for outpatients are made through emails.
  2. Email notifications are sent from Hematology/Oncology Clinic, Clemmons, Davie Medical Center, or any other applicable Wake site to Blood Bank management and to the generic BBFront.

*See phone list on G: Lab\_Shared:BloodBankStaff: BBStaffinformation*

* 1. The notification should indicate the number of units, irradiation requirements, date of intended use and patient's name and medical record number.

1. Front desk prints off a copy of the email.
   1. Front desk will complete steps 4.0 to 6.0 unless workload prohibits. If unable to place order, the email should be placed on the bridge with a notation as to what needs to be completed. The technologist assigned to crossmatch is then responsible for placing the order.
2. Orders are kept in Special Orders Book for 2 months.
3. Check the patient's history and document age, ABO/Rh and special blood needs next to their name.
4. Add the patient’s name and order to the BB Calendar for day of need.
5. Search current inventory of frozen red cells to see if unassigned units or older frozen units are available BEFORE

placing an order for additional units.

* 1. Search for units that are antigen negative for common antigens that are needed.
  2. If a unit is found but assigned to a patient, but the patient has not needed units in the past 24 months, then assign the current patient’s name to the unit as well as the past patient.
  3. Do not initially search for antigen negative for low incidence antigens that we have available antisera (anti-Kpa, anti-Lua, anti-Wra, anti Cw). These can be screened when the unit is crossmatched.
  4. If frozen units are available, document “use frozen units” and the location in freezer on the email and BB Calendar.
  5. Place the email on the Special Antigen Clipboard hanging on the wall to the left of lockers.

1. Evaluate the need to order special antigen negative versus the ability to screen for liquid units internally.
   1. Determine the approximate frequency of the antigen combination in the general population and take into consideration units that are currently antigen screened and in stock.
      1. If you need a unit that is negative for C, E, K and S; then units that are already in house (C,E,K) can be screened for S. Approximately 50% of the population is S negative so you have a good chance of finding liquid units.
   2. This can be determined by multiplying the frequency of antigen negative for each antigen.

a. Ex. Patient has anti-c and anti-K. 20% of population is c negative and 90% is K negative. Multiply

the frequencies (0.2 x 0.9 =0.18). Express as a percentage (0.18 x100 = 18%). 18 percent of the

population is negative for both K and c.

b. If 30% or greater, then screen internally unless anticipate short staffing or blood shortage.

c. If <30%, then order from the blood supplier.

d. The 30% cutoff is a general guideline. Technologists must use clinical judgment based on other factors

such as the urgency of the need, workload, staffing, etc.

* 1. Note on the email with the patient information that units need to be screened internally by transfusion date minus two days and place in incomplete box. (Example: If transfusion date is 9/7 then units need to be screened and available by 9/5.)
  2. Add to BB calendar 48 hours in advance of transfusion date that units need to be screened.
  3. Note on email and BB Calendar where units are to be found.

1. If units are available in stock write "Use Stock" on the email and BB Calendar and place email on Special Antigen Clipboard hanging on the wall to the left of lockers.
2. If units have to be ordered, indicate where units are ordered from and when they are to arrive on the email and BB Calendar and place on Special Antigen Clipboard.
   1. The blue antigen typing card/reservation tag with patient’s name and antigens negative should be attached to the unit.

a. Release unit for other patients if patient is discharged or patient’s hemoglobin is stable or unit is

approaching expiration date.

*Refer to Attachment 8: Antigen Type Card/Reservation Card*

1. Selecting and Ordering Special Blood Products:

| **Ordering for:** | **Ordering units:** |
| --- | --- |
| **Sickle Cell patients Pediatric** | 1. Special order units from the Red Cross or other blood supplier  2. Phenotypically matched for Rh and K, HgbS negative, liquid units, < 7 days old on  day of transfusion.  3. Antigen negative corresponding to any new or existing antibodies, in addition to  being phenotypically matched for Rh and K. |
| **Sickle Cell patients Adult** | 1. Select units from stock inventory 2. Phenotypically match for Rh and K, HgbS negative liquid units. 3. HgbS negative liquid units are inventoried daily. 4. HgbS negative units are tested weekly for C,c,E,e and K or ordered as needed. 5. Antigen negative corresponding to any new or existing antibodies, in addition to being phenotypically matched for Rh and K. 6. These may need to be ordered from ARC or other blood supplier. |
| **Blackfan Diamond (BFD) patients** | * 1. Special order units from the Red Cross and be < 7 days old on day of transfusion.   2. Antigen negative corresponding to any new or existing antibodies. |
| **Patient at risk of TACO** | Orders for patients at risk of TACO:   1. Notify the Medical Director 2. Select the least amount of plasma in platelet unit from inventory. 3. Rate of infusion must be slow over 4 hours. 4. If product unit cannot be infused within 4 hours, split unit and give split unit over 4 hours and then issue the 2nd split unit giving it over a 4 hour period. |
| **All other special orders** | * 1. Units should be ordered according to patient's new or existing antibodies or other special request.   2. Other special requests may include freshest, CMV negative, HgbS negative. |
| **Blood for**  **CODE ECMO** | 1. Freshest Red cells, mannitol free: either CPDA-1 ≤ 7 days old or AS-3 ≤10 days old. 2. These units should be continually available on the ECMO shelf. 3. There is a standing order for units for ECMO. 4. Two units arrive Monday from Blood Connections that are freshest, O negative, AS-3. 5. Two units arrive Thursday from ARC that are freshest, O negative, AS-3. 6. Units are checked daily by third shift for expiration date and moved into regular inventory when CPDA-1 is > 7 days old and AS-3 are > 10 days old. |
| **Granulocytes** | 1. Granulocytes are ordered only with the approval of the Medical Director   2. Granulocytes are requested by submitting the request on the ARC “HLA and Platelet  Laboratory Requisition Form.”  3. Submit the request to the blood order line by fax to 1-800-708-2623.  4. Call to confirm receipt of the request at 1-800-532-0025.  5. Red Cross will fax a form for emergency release of the granulocyte prior to  completion of testing.   1. Obtain medical director’s signature, if available. 2. If weekend or nights and medical director is not available, sign for the medical director and leave for review.   c. Red Cross will fax the form again as testing is completed on the unit. |

1. Placing a Special Blood Order from blood supplier.

*Refer to Section V: Special Blood Product Orders*

1. Ordering Blood from Rare Donor Registry

10.1 Orders for antigen negative for rare units will go through the Red Cross to the Rare Donor Registry if the

Red Cross or other local blood suppliers cannot fill.

a. Examples of rare donor requests would be antigen negative for high incidence antigens such as U, Kpb, Jsb,

Rh46.

10.2The urgency of the transfusion should be communicated in the request.

a. Rare Donor Registry submits a nation-wide request for the units from participating facilities.

b. The participating facilities may or may not relinquish units upon the request.

10.3 Initiate follow-up daily with the blood supplier who submitted.

10.4 If unsuccessful through rare donor registry, consider calling blood centers individually to find units.

**IV. Blood Shortage Protocol**

1. **General Guidelines**
2. Wake Forest Baptist Health Blood Bank will manage a limited blood supply during a shortage to protect the safety of patients as completely as possible given the constraints and nature of the blood product shortage.
3. The protocol will implement practices necessary to manage a limited blood supply during a blood product shortage. Blood shortages can vary in severity, and the blood supply can change rapidly.
4. There are several factors that can affect the severity of a blood shortage such as:

* A severely hemorrhaging patient
* Multiple patients requiring extensive transfusions
* Complex patient serology
* Holidays
* Weather
* Traffic
* Blood supply reductions or interruptions from the American Red Cross or other suppliers.
* Natural and/or deliberate disastrous events.

1. Notify Management of the short-dated status of the products.
2. Blood shortages should be anticipated for holidays and weather-related events.
   1. Planning for these potential shortages in advance is critical to maintaining an adequate inventory.
   2. Contact blood suppliers and get a projected estimate of the impact since these blood shortages may last for several days to weeks.
   3. Proactively seek alternate blood suppliers to meet the inventory needs.
   4. Qualify any new blood suppliers utilized during a shortage.
3. Mild or short-term shortages:
   1. Blood shortages usually require management of the blood supply through methods internal to the blood bank including:
   2. Communication with primary medical teams
   3. Transfusion order screening
   4. Inventory conservation methods
   5. Splitting platelet pheresis with counts of 6.0x1011 or greater into two units can be routinely done. Splitting platelet pheresis with counts less than 6.0x1011 may be approved by Medical Director.
   6. During holidays there is a shortage of platelet donations which will result in a shortage in inventory 3-5 days after.
   7. Consultation with the blood supplier
   8. Contact additional blood suppliers throughout the country
   9. The medical director of the blood bank may triage blood orders or ration blood products as necessary to conserve the institution’s blood supply for the patients.
   10. Increasing the optimal levels of blood inventory according to Blood Bank Inventory During Shortages Worksheet.
   11. Blood Bank management will advise staff when to increase inventory during a shortage.

*Refer to: Blood Bank Inventory During Shortages Worksheet.*

1. More severe shortages:
   1. Perform as necessary procedures listed during mild or short-term shortages
   2. The medical director of the blood bank shall contact the following as necessary in order to coordinate more aggressive blood conservation methods:
2. The Chair of the Blood Conservation Committee
3. Chief of Professional Services
4. Department Chairs and Section Head Physicians
5. Hospital Administration
6. **Maintaining an Inventory of Group O Frozen Red Blood Cells for use during Shortages**
7. The institution maintains some frozen Group O red cells to proactively manage blood shortages.
   1. Inventory is checked periodically.
   2. These units can be identified by checking the inventory printed from computer for Group O red cells with no antigen types.
   3. The inventory is located on the Freezer containing the frozen red blood cells.
   4. The optimal level of Group O negative frozen red cells is 100 and the minimum level is 50.
   5. Management should be notified if units need to be used due to a shortage.
8. Arrangements are made with Red Cross or other blood suppliers when additional frozen units are needed.
   1. Units are ordered periodically to maintain a level of 100 or to replace units used.
9. The Group O negative frozen cells for use during shortages will be kept on the top shelf of Freezer 10.

3.1 The units will be stored in order of expiration date so that the oldest units can be pulled first when

needed.

3.2 When O negative units are needed due to a shortage, the frozen units will be pulled directly from

the stock shelf instead of searching the Inventory for specific units. This will facilitate storage

and ease of use.

3.3 As units are removed from inventory, the units should be either marked off the Inventory list or a

new Inventory generated.

3.4 Metal canisters are returned to blood supplier when empty by crossmatch rotation.

a. A credit request is completed with the number of canisters being returned and faxed to the

Charlotte Red Cross (CRC) Restock at 1-800-708-2623.

b. A rubber band can be placed around the canisters if more than one. Leave the canisters noting

that they are to be returned to Blood Center obtained from and make arrangements for return.

* For ARC a courier will pick them up.

**V. Special Blood Product Orders**

* 1. Order blood with special needs

1.1 You will need to supply patient name, ABORh, product needed, antigen and testing (HBS, CMV)

requirements, special requirements (<7 days old, etc…).

1.2 To order from ARC order in Connect/Blood Hub (<https://arc.bloodhub.com>)

1.3 Print the order form upon completion. To order from another supplier use:

*Attachment 7: Blood Order Form (BB.Form.2091.1)*

1. On the form, circle the blood supplier at top of form ***(Sec I)***, fill in Product information requested ***(Sec III)*** and Info for special order patient blood orders ***(Sec V)***.
2. Call in the order and document Ordering and Delivery information ***(Sec II and IV)*** and # of units to be sent ***(Sec III).***
3. On the *Special Order Arrival Dates* form go to the correct **Delivery date** line:
   1. Write the patient’s last name and the **order date** in the correct columns.
4. There is room for 6 patients per date.

*Refer to Attachment 9: Special Order Arrival Date sheet*

* 1. Document confirmation with “checkmark” that the blood supplier has received and accepted the order.

a. For ARC orders verify that the order has been updated to “In Process” (In ARC Connect search by

order #, click on Order ID# and scroll down to view the status bar).

1. For other suppliers the order has already been confirmed by placing the phone call and the

confirmed column can be check marked.

* 1. Place the order form behind the **DELIVERY DATE** tab once the order has been confirmed. This way all the orders coming on the same day will be in the same spot.
  2. Any problems or changes with the order can be documented on the printed sheet. The blood supplier will call if there are any problems. Document who called along with date, time and initials.

1. Once the units have been received the order form will be pulled from the current date.
   1. Units are verified to be negative for all necessary antigens and other appropriate qualifications (i.e. < 7 days old, HBS neg, etc..).
   2. If the antigen typings are historic (including HBS negative) the typings will be on a paper either in the frozen canister, an envelope in the box or it has been faxed.
2. Once the blood has been received, verify that the special requirements have been met.
   1. For ARC orders:

a. Check mark by each antigen/ special order request on the order sheet to document the unit matches.

b. Initial the sheet.

* 1. For other suppliers:

a. Check mark by each antigen/special order request on the order sheet to document the unit matches.

b. Fill out Products Received Information section at bottom of sheet.

1. Once the units have been verified for accuracy against the order form, place the order form behind the tab in the back of the book. Forms are to be kept for 2 months.
   1. The current month’s completed orders will go behind the tab in the book labeled: Completed Orders
   2. At the end of the month 3rd shift will:
2. Move the completed orders to the next tab in the book labeled: Previous Month
3. Discard the Previous Month forms.
4. **Autologous and Directed Donation**
5. Autologous and Directed donations are scheduled through the patient's physician with American Red Cross.
   1. The physician completes the ARC Special Collection Order request and sends to the Red Cross. This form is also used for the collection of autologous or directed plateletpheresis products.

*Refer to Protocol: Requesting Autologous and Directed Donor Donations*

* 1. Autologous and Directed Donation forms are available in the forms drawer and in BB Staff Info folder.

1. The forms can be emailed to self, using copier if electronic copy needs to be sent.
   1. Contact information for donation scheduling:

Phone: 800-522-4587 or 800-458-5093 or FAX: 704-347-8459

1. The Red Cross will fax the Patient Information Report and/or the completed ARC Special Collection Request form to Blood Bank.

*Refer to Attachment 10: Patient Information Report*

1. Patient Information Report and/or completed ARC Special Collection Request form should provide patient's name, date of birth, expected transfusion date and product requested with any special requirements.
   1. SCC and EPIC computer system can be checked for patient by name and verify date of birth. The blood type and MR# is documented on Patient Information Sheet. Check for any special blood requirements.
   2. EPIC can be checked for patient by name and date of birth. Verify as much information as possible to make sure unit is assigned to correct patient.
   3. Enter a special message in SCC (AUTO or DIR) for patient when form is received to alert during history review that autologous or directed units are available.
2. All autologous and directed units are crossmatched either serologic or electronic to detect incompatibility.
3. All Directed units are irradiated.
4. Autologous units do not require irradiation.
   1. However all Bone Marrow donors will receive IRRADIATED blood products (Even if the donor has an autologous unit, it must be irradiated.)
5. Obtain an Auto/Dir Unit Pending Form
   1. Complete Patient Demographic in Section I of *Auto/Dir Unit Pending form.*
6. *Refer to Attachment 8: Auto/Dir Unit Pending form*

* Record initials, date and time in Section 2
* Attach Red Cross form to back of Auto/Dir Unit Pending form.
* Put in Incomplete File on date that is day before need/surgery.

1. Enter appropriate special message into SCC

* Surgery date
* If auto, special message “Auto” in PCW
* If directed, special message, “DDU” in PCW.
  1. Changes to the Surgery Date

1. Send units to be frozen to ARC if necessary
2. Consult with BMT department if patient is a BMT donor.
   1. On Receipt of Special unit, pull auto/dir pending form from Incomplete file
3. Circle “Yes” and record date and time received
4. For liquid or frozen units, check to see if sample has been received.
5. Investigate if sample is not received.
6. For frozen units, send an email to BB staff with instructions on deglycerolizing and attach a copy to Auto/Dir Pending form.
   1. Explain if units are not allocated or crossmatched and document on Auto/Dir Unit Pending form.
   2. Auto/Dir forms are stored in the irradiator room upon completion for 5 years.

*Refer to Attachment 11: Autologous/Directed Unit (s) Pending*

1. The American Red Cross has one central location that is responsible for scheduling autologous or directed donations, collection of units, product processing, product tracking and release of units.

|  |  |
| --- | --- |
| Contact information for Donation Scheduling:  Phone: 800-522-4587 or 800-458-5093  Fax: 704-347-8459 | Contact information for Product Inquiries:  Phone: 800-438-3916  Fax: 704-347-8403 |

* 1. Refer to BB Staff folder on G: Drive> BB Staff>Phone Numbers>Blood Centers for specific phone numbers for

autologous and directed donation questions.

1. Refer any requests for ARC forms for Special Request Units, to Intranet: Requesting Autologous and Directed Donor

Donations.

1. **Inventory for Other Facilities**
2. **General Guidelines**
3. Facilities within the Wake Forest Baptist Health system may make special requests.
4. Facilities within the system include Nursing Home facilities (Oak Summit, Brookridge, Kernersville-Britthaven and various Dialysis Centers.
   1. The above facilities may submit samples for type and crossmatch. The account numbers and ordering procedure is slightly different for each one. Refer to the table in Step 5.

3.0 Wake Forest Baptist Health provides blood and blood products to dialysis centers.

3.1 Dialysis Centers are under the direction of an appropriate medical director.

3.2 Agreements are retained by management for dialysis centers that are not a part of Wake Forest Baptist

Health.

4.0 WFBMC using SCC should use the Inventory>Transfer function when sending blood/blood products to

another site either crossmatched or selected or for stock in refrigerator.

*Refer to Attachment 12: Units for WFBMC offsite Locations Quick Reference Guide.*

5.0 Account numbers can be obtained for facilities for charging purposes by consulting the following table.

|  |  |  |
| --- | --- | --- |
| **Facility** | **Account Number** | **Special Instructions** |
| Dialysis Facilities - Including Northside and Piedmont, Miller Street, Mt Airy, Elkin, Southside. | Weekdays- contact Laboratory Customer Service to create a visit. (Phone: 62667 or 62610 or 34142) or Do One Click registration in Beaker (WakeOne). | |
| Oak Summit, Brookridge, Britthaven | Use patient's NCBH medical record number (MR#) and account number listed. | Contact Laboratory Customer Service to create a MR# or visit (Phone: 62667 or 62610 or 34142) or Do One Click Registration in Beaker (WakeOne) |

6.0 Lexington Medical Center may make special requests to wash or irradiate blood products or requests for

special blood products.

* 1. Consult with management regarding the request.
  2. If request is to perform product modification, then the outside facility will need to be billed.

a. Notify management on a Quality Assurance (QA) form.

7.0 Facilities outside the Wake Forest Baptist Health system may make special requests to wash or irradiate blood

products or requests for special blood products.

* 1. Consult with management regarding the request.
  2. If request is to perform product modification, then the outside facility will need to be billed.

a. Notify management on a Quality Assurance (QA) form.

* 1. If component was sent from the outside facility, enter into inventory in computer.

*Refer to Routine: Blood Product Entry*

* 1. Complete internal Transfer form to send to outside facility.

*Refer to Attachment 13: Transfer Form*

* 1. The computer functions for return should be completed.

*Refer to QC: Unit Status/Disposition*

7.6A copy of the transfer paperwork is kept (if used) and put with Red Cross/OB invoices.

* 1. The units should be packed for return with the top (white) copy of the Internal Transfer form.

*Refer to QC: Shipping Regulations for Blood and Blood Products.*

8.0 Billing other facilities for component preparation of blood products.

a. Notify management on a Quality Assurance (QA) form.

1. **Requests from Davie Bermuda Run**

1.0 Wake Forest Baptist Health provides 4 to 6 Group O, Rh negative packed cells to Davie at Bermuda Run.

1.1 Davie Bermuda Run (DBR) maintains this inventory for emergency situations.

2.0 Wake Forest Baptist Health (WFBH) will provide testing and units to DBR for surgical cases and/or

transfusion.

1. Properly identified sample will be submitted with orders to Blood Bank.
2. Delayed crossmatch form will be utilized for future surgery patients with potential blood needs.
3. Testing will be performed.
4. DBR will be placed in the DBR surgical case of the BB Monitor the day BEFORE surgery.
5. Patients with antibodies will not have surgery at DBR but will be rescheduled to WFBMC.
6. Notification of DBR patients with antibodies will be to the DBR lab.
7. For surgical cases, the blood will be crossmatched and sent to DBR the day BEFORE surgery.
   1. Blood will be TRANSFERRED to DBR in SCC.
8. Two (2) copies of the transfer form will be printed from SCC.
9. One copy of the transfer form is placed on top of the inside cooler and one copy is kept at Blood Bank.
10. Blood with a Safe-T-Vue attached will be packed in a 5 day cooler and secured.
11. The blood Bank Issue form will be completed and the pink copy placed on top of the cooler with the patient]

*Refer to Attachment 12: Units for WFBMC offsite Locations Quick Reference Guide*

1. **Blood Products Sent from Other Facilities with Transferred Patient**
2. On rare occasions, a patient may be transferred from another facility with units of blood for emergency use during transit. If the units are not used, they should be sent to Blood Bank.
3. Units must be packed appropriately with correct shipping conditions and paperwork.

*Refer to Intranet: Blood Products Sent with Patients and/or Received from Other Facilities with Transferred Patients*

1. **Blood Products Sent with Patient to Other Facilities from WFBH Blood Bank or Air Care Transport**
2. A patient may be transferred from WFBH to another facility with units of blood for emergency use during transit by ambulance
3. Units must be packed appropriately with correct shipping conditions and paperwork.
4. Air Care may occasionally transfer a patient directly to another hospital without the patient being admitted to WFBH.
   1. Notify Management.
5. Notify Management when blood products from WFBMC go to another facility when they refuse the transfer form or not in scope of ARC territory.

*Refer to Intranet: Blood Products Sent with Patients and/or Received from Other Facilities with Transferred Patients*

**VIII. Patient Blood Orders**

1. **Excessive Requests for Blood Product or Questionable Orders**
2. Blood Bank staff must use clinical judgment and experience to determine when the number of blood product orders is excessive or questionable.
3. Requests for excessive multiple blood products should be directed towards the pathology resident or medical director.
4. Examples of excessive or questionable orders:
   1. Requests for multiple units of platelets pheresis in patients from areas other than OR or critical care areas.
   2. Requests for more red cell units than in the past for exchange transfusions in sickle cell patients.
   3. Requests for more than 4 plasma units (except patients undergoing plasma pheresis or MTP)
   4. Requests during MTP that are outside the Massive Transfusion Protocols and seem excessive.
   5. Group AB in-patients (exception BMT and ABO Incompatible kidney recipients, Heart transplant patients, Cardiac surgery patients) may be evaluated for receipt of Group A plasma when AB plasma inventory is low.
   6. Group AB patients for plasma pheresis should be evaluated by the medical director to determine if Group A or Group AB plasma is appropriate.
   7. Irradiation requests that are outside the normal patient population requiring irradiation.
   8. Historical irradiation requests for neonates that are no longer applicable.
   9. Requests for CMV negative products.

3.10 All Special requests made by physicians or family members must be brought to management's

attention and be approved by the Medical Director. Examples include CMV negative blood

products when no medical reason or specific anticoagulants, etc.

1. Medical Director should be notified next business day of any emergency Sickle Cell Exchange Transfusions.
2. **Jehovah’s Witness or Patients Refusing Transfusion**
3. Informed consent for transfusion or refusal for transfusion must be obtained from the patient by the provider.
4. If an order is received for a known Jehovah's Witness:
5. In SCC enter special message: JW (Jehovah Witness) in Patient Caution Window (PCW). Complete testing if a sample is received.
6. If an order is received on a non-Jehovah Witness patient “refusing blood transfusion”:
7. In SCC add Special Message: No BLD: (Patient Refuses Blood Products) in PCW.
8. There is a blue packet of information available for Jehovah’s Witness patients (located in the forms drawer).
9. Blood Specimen
   1. If blood specimen received, complete testing.
   2. If blood specimen not received, do not proceed to request specimen.
10. Notify Management and Transfusion Safety Officer.
    1. Notification can be done by email if after hours.

**3. Review/Revised/implemented:**

All protocols must be reviewed according to the Document Control Protocol.

All new protocols that have major revisions must be signed by the CLIA Director.

All reviewed protocols with minor revisions can be signed by the designated section medical

director or designee.

**4. Related Protocols:**

Routine: Blood Product Entry

Components: Granulocytes

Routine: Davie County Hospital

QC: Unit Status Disposition

QC: Shipping Regulations for Blood and Blood Products

ARC Connect Online Blood Ordering System

QP: Errors, NonConformances, Adverse Reactions

Protocol: *Blood Products Sent with Patients and/or Received from Other Facilities with Transferred Patients*

Routine**:** *Davie Outpatient Transfusion Services at Davie Medical Center- Mocksville and Davie Medical Center*

*Bermuda Run Agreement*

*Protocol: Requesting Autologous and Directed Donor Donations*

See phone list on G: Lab\_Shared:BloodBankStaff: BBStaffinformation

Policies: Power Failure Polices

**5. References**:

Standards for Blood Banks and Transfusion Services. AABB periodically revised.

**6. Attachments**:

***Attachment 1: Qualifying a Blood Supplier***

***Attachment 2: Blood Bank Inventory Sheet***

***Attachment 3: Standing Orders for Blood Products***

***Attachment 4: ARC Blood Products FAX ORDER FORM***

***Attachment 5: Blood Bank Platelet Inventory***

***Attachment 6: Special Antigen Order Form***

***Attachment 7: Blood Order Form (Non-ARC)***

***Attachment 8: Antigen Typing Card/Reservation Card***

***Attachment 9: Special Order Arrival Dates***

***Attachment 10: ARC Patient Information Report***

***Attachment 11: Autologous/Directed Units Pending***

***Attachment 12:*** *Units for WFBMC offsite Locations Quick Reference Guide*

***Attachment 13: Blood Product Transfer Form (WFBMC)***

***Attachment 14: Red Cross Emergency Phone Numbers***

**7. Revised/Reviewed Dates and Signatures:**

See Document Change Control