

DEPMEDS LABORATORY PROCEDURES
DEPARTMENT OF CLINICAL SUPPORT SERVICES
U.S. ARMY MEDICAL DEPARTMENT CENTER AND SCHOOL
FORT SAM HOUSTON, TEXAS 78234-6137

MCCS-HCL

STANDING OPERATING PROCEDURE

01 November 01

CROSSMATCH (IMMEDIATE-SPIN)

1. PRINCIPLE:

An immediate-spin crossmatch is performed to verify ABO compatibility between patient and donor unit.

2. SPECIMEN:

- a. For unit verification: 1 unit segment.
- b. For patient verification: serum less than 72 hrs old.
- c. Store at 1-6°C.
- d. Save specimens for 7 days following transfusion.

3. REAGENTS AND EQUIPMENT:

- a. Centrifuge.

NOTE: | Use biohazard precautions and wear Personal Protective Equipment (PPE) when handling or pipetting body fluids or products.

- b. Anti-A: Store at 1-6°C.
- c. Anti-B: Store at 1-6°C.
- d. Anti-D (Nova Sera): Store at 1-6°C.
- e. A Cells (prepared locally): Store at 1-6°C.
- f. B Cells (prepared locally): Store at 1-6°C.
- g. Normal (0.85%) Saline: Store at room temperature (25°C), avoid excessive heat, protect from freezing.

4. QUALITY CONTROL:

- a. Centrifuge: See Blood Bank Quality Control SOP, Serological Centrifuge Calibration.
- b. Anti-A, Anti-B, Anti-D, A cells, B cells, normal saline: See Blood Bank Quality Control SOP, Reagent Quality Control.
- c. Technician Proficiency: See Blood Bank Quality Control SOP, Technician Proficiency

5. PROCEDURE:

- a. Verify that information on specimen tube and SF 518 match.

NOTE: Use biohazard precautions and wear Personal Protective | Equipment (PPE) when handling or pipetting body fluids or products.

- b. Centrifuge the blood and separate the serum. Place serum in a test tube labeled with patient identification.
- c. Prepare a 2% to 5% red cell suspension. Ensure test tube is labeled with patient identification.
- d. Label 5 test tubes as follows:
 - (1) A (Anti-A)
 - (2) B (Anti-B)
 - (3) D (Anti-D)
 - (4) AC (A Cells)
 - (5) BC (B Cells)
- e. Place test tubes in appropriate holes in test tube rack. Ensure all test tubes are labeled with patient identification number.
- f. Perform an ABO group and Rh type on the patient's specimen.
- g. Record graded results on blood bank work sheet.

NOTE: Soak tubes and pipets in 10% bleach solution for 8 hours and dispose in regular trash. Drain solution into biowaste pit.

- h. After determining the patient's group and type, pull the appropriate number and type of units.
- i. Detach a sealed segment from each unit to be crossmatched.
- j. Place each segment in a test tube labeled with the donor number and segment number.
- k. For each unit to be crossmatched (X), label one tube with segment # and X.
- l. Place each test tube in appropriate hole in test tube rack. Ensure test tube has patient identification.
- m. Add twodrops of patient's serum to the tube labeled X.
- n. Add one drop of donor cells, using applicator stick, to the corresponding X tube labeled with the segment # and appropriate patient identification.
- o. Centrifuge all X tubes at the optimum speed and time. Read and record graded results as positive (+) or negative (=).

NOTE: Soak tubes and pipets in 10% bleach solution for 8 hours and discard in regular trash. Drain solution into biowaste pit.

- p. Save specimens for 7 days following transfusion.
- q. Enter crossmatch results in the blood bank log book. Make appropriate entries on the SF 518.
- r. Fold the SF 518 so that the patient name can be easily read. Attach the SF 518 to the front of the unit with a rubber band. Place the unit on the refrigerator shelf used to hold crossmatched units.

6. RESULTS:

- a. Compatible unit.
 - (1) Compatible ABO cell group.
 - (2) Compatible Rh type.
 - (3) No agglutination or hemolysis in the X tube.

- b. Incompatible unit.
 - (1) Incompatible ABO cell group.
 - (2) Giving Rh positive unit to an Rh negative patient.
 - (3) Agglutination or hemolysis in the X tube.
 - (4) Investigate all incompatibilities for possible typing and/or labeling errors; notify NCOIC. Put unit in refrigerator and pull another for testing.
7. PROCEDURAL NOTES:
- a. To make a 2% to 5% cell suspension: Mix one drop of packed red blood cells with 1 to 2 mL of saline(1 mL = 20 drops).
 - b. Grading reactions.
 - (1) Hold test tubes up to an overhead light or a mirror with reflected light. Shake the tubes gently so that the cell button is shaken loose from the bottom of the tube. Watch the cells dislodge from the cell button. Gently tilt tubes several times until an even suspension is obtained throughout. Tubes should be held at an angle so that the movement of the fluid over the button helps to dislodge the cells.
 - (2) Grade the agglutination pattern according to the following scheme:
 - (a) 4+ : one large, tight clump, macroscopically.
 - (b) 3+ : one large, loose clump with several small clumps, macroscopically; or several large clumps, macroscopically.
 - (c) 2+ : medium-sized clumps with clear background, macroscopically.
 - (d) 1+ : many small clumps with turbid red background, macroscopically.
 - (e) +/- : 2-3 small (5-10 cells) clumps per field, microscopically.
 - (f) = : no agglutination; homogeneous suspension of red cells.

(g) h : hemolysis.

c. Unit selection.

(1) ABO compatibility by order of selection.

Patient group	Order of donors			
	1	2	3	4
AB	AB	A	B	O
A	A	O		
B	B	O		
O	O only			

(2) Rh compatibility.

Patient Rh type	Order of donors	
	1	2
POS	POS	NEG
NEG	NEG only	----

d. Ensure units pulled are the oldest units in storage, but NOT outdated. Some patient conditions may require fresh blood.

e. Ensure there is only one patient specimen per test tube rack.

8. REFERENCE:

a. TM 8-227-3, AABB Technical Manual, Aug 93.