LABMOEBACK SU 2024

Procedures Manual

First Edition

Blood Typing Procedure

Blood typing is a laboratory test used to determine an individual's blood group (A, B, AB, or O) and Rh factor (positive or negative).

Principle

Blood typing is based on the agglutination reaction between antigens on the surface of red blood cells and specific antibodies. When blood is mixed with anti-A, anti-B, and anti-D (Rh) sera, agglutination indicates the presence of the corresponding antigen.

Clinical Reasons for Performing the Test

- To ensure compatibility for blood transfusions
- To determine Rh compatibility in pregnancy
- To identify blood type for organ transplantation
- To diagnose hemolytic disease of the newborn

Specimen Requirements

Specimen Type:	Whole blood
Volume:	5 mL
Container:	EDTA tube (lavender top)

Criteria for Specimen Collection, Labeling, Rejection, Storage, Transport

A. Collection

Venipuncture using standard aseptic technique

B. Labeling

Patient's name, ID number, date, and time of collection

C. Rejection

Hemolyzed samples, improperly labeled specimens

D. Storage

Store at 2-8°C if not tested immediately

E. Transport

Transport at 2-8°C within 24 hours

Procedures for Submission to Central Labs

- Ensure proper labeling and documentation
- Use appropriate transport containers
- Submit with a completed requisition form

Procedures for Microscopic Examinations

Not applicable for blood typing.

Reagents or Media, Supplies, Equipment

Reagents:	Anti-A, Anti-B, Anti-D (Rh) sera
Supplies:	Glass slides, applicator sticks, lancets, pipettes
Equipment:	Centrifuge, microscope (if needed for confirmation)

Preparation of Reagents, Stains, or Other Materials Used in Testing

Follow manufacturer's instructions for preparation and use of anti-sera.

Storage Requirements

- Store reagents at 2-8°C
- Do not freeze reagents
- Check expiration dates regularly

Calibration

Not applicable for blood typing

Quality Control

Control Materials:	Known blood type samples (positive and negative controls)
Preparation, Handling, and Storage:	Follow manufacturer's instructions
Frequency of Testing:	Daily before patient testing
Expected Results:	Known controls should show expected agglutination patterns
Corrective Actions:	Re-test with new reagents if controls fail
Recording and Storage of QC Data:	Document results in QC log
Alternatives:	Use commercial QC kits if available

Step-by-Step Instructions

1. Label slides with patient ID.

2. Place one drop of anti-A, anti-B, and anti-D sera on separate areas of the slide.

3. Add one drop of patient blood to each reagent drop.

4. Mix with separate applicator sticks.

5. Observe for agglutination within 2 minutes.

Quantitative Testing

Not applicable for blood typing.

Qualitative Testing

Interpretation:

1. Agglutination with anti-A: Blood type A
2. Agglutination with anti-B: Blood type B
3. Agglutination with both: Blood type AB
4. No agglutination: Blood type O
5. Agglutination with anti-D: Rh positive
6. No agglutination with anti-D: Rh negative

Calculations

Not applicable for blood typing.

Reporting Results

Reference Intervals:	N/A
Procedures for Reporting Abnormal Results:	Immediate notification to the physician
Reporting Format:	Electronic or paper report with blood type and Rh factor

Procedure Notes

- Ensure proper mixing of blood and reagents
- Avoid contamination between samples.

Special Precautions

- Use personal protective equipment (PPE).
- Handle all specimens as potentially infectious.

Possible Sources of Error

- Hemolyzed samples
- Incorrect labeling
- Expired reagents

Answers to Common Problems

No agglutination:	Check reagent expiration, re-test with new reagents.
Weak agglutination:	Ensure proper mixing and adequate sample volume.

Limitations of Methods

1. Cannot detect weak D antigen.
2. False negatives in cases of very low antigen expression.

A Troubleshooting or Back-Up Plan

1. Repeat test with new reagents.
2. Confirm results with an automated blood typing system if available.

Job Aids

Flow Diagrams:	Blood typing procedure flowchart
Poster:	Blood typing interpretation guide

Resources

1. Manufacturer's Product Inserts
2. Journals
3. Publications
4. Textbooks

Effective Recording

- Focus on accuracy and detail.
- Ensure clarity and legibility.
- Verify and validate all steps.
- Follow standardized procedures.

Patient Management

Ensure timely reporting of results for patient care.

Public Health Management

Maintain accurate records for epidemiological studies.

References:

Healthline. (n.d.). *Blood typing.* Healthline. https://www.healthline.com/health/blood-typing

Lab Tests Online-UK. (n.d.). *Blood typing*. Lab Tests Online-UK. https://labtestsonline.org.uk/tests/blood-typing

MedlinePlus. (n.d.). *Blood typing.* MedlinePlus. https://medlineplus.gov/ency/article/003345.htm

American Red Cross. (n.d.). *Blood types*. American Red Cross. https://www.redcrossblood.org/donate-blood/blood-types.html

Mayo Clinic. (n.d.). *Blood typing.* Mayo Clinic. https://www.mayoclinic.org/tests-procedures/blood-type/about/pac-20385101

National Center for Biotechnology Information. (2011). *Blood typing.* NCBI. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3078522/

World Health Organization. (n.d.). *Blood transfusion safety.* WHO. https://www.who.int/teams/blood-transfusion-safety

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