1. **Principle**

A red cell suspension of approximately 3% in normal saline is used for many common serologic procedures. This strength of red cell suspension results in the appropriate serum to cell ratio and ensures an adequate number of red cells to allow for grading and interpretation of test results.

1. **Scope and Related Policies**
   1. A 3% red cell suspension is used for the following test methods:

* ABO and Rh typing
* Direct antiglobulin test and auto control
* Donor unit compatibility (crossmatch)
* Red cell phenotyping
  1. Red cell suspensions should be used for testing on the day of preparation for best results.
  2. A clerical check must be performed to ensure the patient identification on the specimen used for testing is identical to the information on the request form.

1. **Specimen**

EDTA anticoagulated whole blood

1. **Material**

**Equipment:** Block for test tubes

**Supplies:** Test tubes – 10 x 75 mm

Serological pipettes

**Reagents:** Normal saline

1. **Quality Control**
   1. The prepared 3% red cell can be compared visually to a commercially prepared 3% red cell suspension to ensure the appropriate strength has been achieved.
   2. The 3% red cell suspension must be well mixed prior to using for testing.
2. **Procedure**

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| **STEP** | **ACTION** |
| 1. Label Tubes | |  |  | | --- | --- | | ***If*** | ***Then*** | | Patient cells | Label a test tube with the first three letters of the patient’s family name: transcribe this from the specimen tube not from the request form. | | Donor unit cells | Label a test tube with the donor unit number. | |
| 1. Prepare 3% suspension | 1. Dispense 2 drops of whole blood (or equivalent: 1 drop of packed cells) in the labelled tube. 2. Add 0.5 to 1.0 mL of normal saline and mix to resuspend to 3%. 3. Compare the colour visually with a 3% commercial red cell suspension and adjust the suspension strength if necessary. Alternatively, one drop of the prepared red cell suspension and one drop of a commercial red cell suspension can be placed into test tubes, the tubes centrifuged and the size of the resulting red cell buttons can be compared. 4. Mix the prepared 3% red cell suspension well immediately prior to use. |

1. **Reporting – N/A**
2. **Procedural Notes**
   1. If desired, or if testing discrepancy is encountered, washing the red cells in normal saline prior to making up to a 3% red cell suspension may be performed. Dispense red cells into a test tube and fill test tube with normal saline. Centrifuge the tube (to obtain clear supernatant and a defined red cell pellet). Remove the supernatant and repeat. Following the last removal of supernatant, resuspend the red cells with normal saline to a 3% red cell suspension.
3. **References**
   1. Roback JD, ed AABB Technical Manual, 17th ed. Bethesda, MD: American Association of Blood Banks, 2011
4. **Revision History**

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| **Revision Date** | **Summary of Revision** |
| January 31, 2014 | * Revised name of manual * Changed document number from RT 014 to RT 003 * Updated reference list to include the most recent edition |