Troubleshooting Hemolysis Issues in the Clinical Laboratory

Hemolysis is defined as the rupture or breakage of the red blood cell (RBC) membrane, causing the release of hemoglobin and other internal cellular components into the surrounding fluid.

Hemolysis causes a serum or plasma sample to take on a pink or red tinge, due to the presence of the heme from the red cell.

A hemolyzed sample can be a tremendous concern for the laboratory. The hemolysis can cause a false elevation in some analytes, such as potassium and lactate dehydrogenase (LD), due to their high concentration in the red cell.

The red or pink color of a hemolyzed sample can also interfere with some test methodologies, such as spectrophotometric methods. The amount of analyte interference will depend on the degree of hemolysis and the methodology being used. Hemolysis can be a reason for specimen rejection, thus causing the patient sample to be redrawn.

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Hemolysis is a common issue in the clinical laboratory, affecting the accuracy of test results. It can lead to false elevations in analytes due to the release of hemoglobin and other cellular components. Proper handling and specimen processing are crucial to minimize hemolysis and ensure reliable test results.
Hemolysis can be caused by many variables, including a traumatic venipuncture, improper handling and processing of blood collection tubes, and adverse conditions when samples are being transported to a laboratory. In order to help you identify potential reasons that you may be getting hemolyzed samples, this issue of LabNotes will provide you with a Troubleshooting Hemolysis Issues wall chart.

The chart is broken down into three sections: Specimen Collection, Processing/Handling/Transport and Patient Factors. For each possible contributing factor of hemolysis, there is a consequence and a corrective action section. Keep in mind that hemolysis may be caused by more than one factor during the blood collection and handling process.

### Processing (Mixing) of Tubes

#### Why
- Most tubes contain an additive or clot activator that needs to be mixed with the blood sample.
- Tubes with anticoagulants such as EDTA need to be mixed to ensure that the specimen does not clot.

#### How
- Holding tube upright, gently invert 180° and back.
- Repeat movement as prescribed for each tube.

#### When
- Immediately after drawing.

#### Consequences if not mixed
- Tubes with anticoagulants will clot.
- BD Vacutainer® SST™ Tubes may not clot completely.
- Specimen may need to be redrawn.
Did you know?

According to an Industry Study

In 50% of the injuries to nurses involving a blood collection set, the individual sustaining the injury felt that other engineering protection, administrative controls or practices could have prevented the injury.*

Visit [www.bd.com/vacutainer](http://www.bd.com/vacutainer) to learn about the only blood collection system with push-button technology and in-vein activation.

Visit [www.nationalphlebotomy.org](http://www.nationalphlebotomy.org) for more information about the goals, certification programs, and links to jobs in your region and area of interest.

**Related Industry Web Site**

**BD Vacutainer Alcohol Swabs**

The convenient and easy way for antiseptic preparation of the skin prior to blood collection or injection.

**NPA**

In 1978, the National Phlebotomy Association established an industry for the healthcare community and has been the only organization concerned with all aspects of educating and certifying the nation’s phlebotomists.

The Association was founded by Diane C. Crawford for the purpose of establishing a professional standard and code of ethics for this important group of healthcare specialists. From the beginning, NPA has been firmly committed to excellence in developing educational curriculum, providing accreditation, offering continuing education programs, researching issues involving phlebotomy, and promoting professional and public awareness.

NPA has certified over 15,000 phlebotomists in all 50 states, the District of Columbia, Puerto Rico, Barbados, Canada, and Switzerland with 75 accredited teaching programs in universities, colleges, healthcare training institutes, and hospitals nationwide.

Visit the NPA Web site to find out more about their goals, certification programs, and links to jobs in your region and area of interest.[www.nationalphlebotomy.org](http://www.nationalphlebotomy.org)
To get your complimentary Troubleshooting Hemolysis Chart:

Write to us at: vacutainer_techservices@bd.com

Please include all of the following information in your e-mail request:

- Your Full Name
- Your Job Title
- Your Facility Name
- Facility Street Address
- Facility City, State, Zip Code
- Telephone Number

This offer is intended for clinical laboratorians in U.S. hospitals and reference laboratories and is open only to legal residents of the 50 states in the United States and the District of Columbia.
In order to provide you with a streamlined product offering that is clinically proven, medically necessary, and helps your facility to comply with regulations, certain BD products have been marked for discontinuation.

Recognizing the impact that a product discontinuation could have on your institution, we are committed to providing support as you transition to alternative BD Vacutainer® Tubes. For full details, visit our Web site or contact our BD Global Technical Services staff by phone or e-mail.

www.bd.com/vacutainer
vacutainer_techservices@bd.com
1.800.631.0174

Effective May 31, 2006
the following BD Vacutainer® Blood Collection Glass Tubes will no longer be produced

<table>
<thead>
<tr>
<th>BD Vacutainer® SST™ Tubes</th>
</tr>
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<tbody>
<tr>
<td>366510 Glass, Conventional Stopper, 16 x 100 mm, 9.5 mL</td>
</tr>
<tr>
<td>366514 Glass, Conventional Stopper, 13 x 75 mm, 4.0 mL</td>
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<th>BD Vacutainer® PST™ Tubes</th>
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<tr>
<td>366698 Glass, Conventional Stopper, 13 x 75 mm, 4.0 mL</td>
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<tr>
<td>366595 Glass, Conventional Stopper, 13 x 100 mm, 6.0 mL</td>
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<tr>
<th>BD Vacutainer® Glucose Tubes</th>
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<tbody>
<tr>
<td>366383 Glass, Conventional Stopper, 10.25 x 64 mm, 3.0 mL</td>
</tr>
<tr>
<td>366471 Glass, Conventional Stopper, 13 x 75 mm, 5.0 mL</td>
</tr>
</tbody>
</table>
WEB-BASED SEMINARS

BD Global Technical Services is continually expanding its efforts to help you benefit from our clinical knowledge and expertise. Join us as we commemorate the upcoming launch of BD Vacutainer® Instruct online continuing education Webinar program. Future Webinars include:

- **Tips and Techniques: Helping You Provide Phlebotomy Excellence**
- **Ergonomics in the Clinical Laboratory Environment**
- **Managing Preanalytical Variables – Part I**
- **Managing Preanalytical Variables – Part II**
- **Troubleshooting Hemolysis**

BD is approved as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E® Program.

For more information please visit [www.bd.com/vacutainer](http://www.bd.com/vacutainer)

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The CLMA ThinkLab 2006 was recently held in Charlotte, North Carolina.

Congratulations to the 2006 recipients of the Lyle Rosser, Jr. Continuing Education Scholarship Program, sponsored by BD.

**They are:**

- Lisa Anthony
  Health Network Laboratories
  Allentown, PA

- Ida (Dolly) Burdick
  Calumet Medical Center
  Chilton, WI

- Suzy Ghazarossian
  Century City Doctors Hospital
  Los Angeles, CA

- Teresa Jarvis
  United Medical Center Laboratories
  Cheyenne, WY

- Dan Leger
  Restigouche Health Authority
  Campbellton, New Brunswick Canada

- Angela Mack
  Sauk Prairie Memorial Hospital
  Prairie du Sac, WI

- Sue Martinmaas
  Tahoe Forest Hospital District
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- Jean Sapere
  Inland Hospital
  Waterville, ME

- Bonnie Sellers
  Bon Secours Hampton Roads Laboratory
  Norfolk, VA

- Camille Williams
  Faulkner Hospital
  Boston, MA

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COMING SOON

Preanalytical Variables in Urine Testing
(second in a two-part series)