Q&A column, 6/17

Editor: Frederick L. Kiechle, MD, PhD

Submit your pathology-related question for reply by appropriate medical consultants. CAP TODAY will make every effort to answer all relevant questions. However, those questions that are not of general interest may not receive a reply. For your question to be considered, you must include your name and address; this information will be omitted if your question is published in CAP TODAY.

Submit a Question

Q. Our analyzer reported nucleated red blood cells of six, with no cellular interference flag. The technologist missed that the automated NRBC was six. When he performed the manual differential, he noted more than five NRBCs and performed a corrected count and certified it. Is it acceptable to report out the automated white blood cell value as well as the corrected WBC?

A. The reporting of both automated and corrected WBC values may be confusing to clients interpreting complete blood count results. Indeed, the CAP hematology and coagulation checklist requirement HEM.30100 requires that "There is a written procedure available and in use for detecting and correcting automated WBC counts for the presence of nucleated red cells. . . ."[1] By my interpretation, this requirement implies that automated WBCs should be corrected, in turn suggesting only the corrected value be reported.

1. College of American Pathologists. HEM.30100 Detection/Correction Procedure—WBC. In: Hematology and Coagulation Checklist. Aug. 17, 2016.

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Q. In thawing plasma specimens for routine coagulation studies (prothrombin time, partial thromboplastin time, D-dimer, fibrinogen) as well as for special coagulation studies (lupus, proteins C and S), I am aware that water bath (37°C) thawing is highly recommended. Would the results of these tests be affected if I thawed them using a dry heating block? Are we allowed to use dry heating blocks?

A. The reader correctly points out that the preferred manner in which to thaw frozen plasma samples for coagulation studies is a water bath. It is specifically recommended that frozen plasma samples are thawed rapidly in a 37°C water bath for approximately three to five minutes, depending on the size of the aliquot tube, the amount of plasma in the tube, and the number of tubes in the water bath. Samples should be completely thawed but not left to linger in the water bath after thawing is complete. Care must be taken to ensure that the water bath is consistently maintained at the correct temperature. Inadequate or excessive incubation at 37°C must be avoided as sample integrity may be compromised if samples are either not completely thawed or maintained too long at 37°C. Incomplete thawing may not allow proteins that precipitate in the cold, such as factor VIII, factor XIII, and von Willebrand factor, to come into solution, resulting in the potential to falsely report these factors as decreased. This could result in an incorrect diagnosis and serious patient mismanagement. Prolonged exposure to 37°C or exposure to higher temperatures may lead to deterioration of coagulation factor activities and the reporting of spuriously low coagulation factor activity results or spuriously elevated activated partial thromboplastin times and prothrombin times.
Once samples are thawed, they should be promptly removed from the water bath and thoroughly and adequately

mixed before testing. The advantage of thawing samples in a water bath is that the heat source is indirect and the thawing process is gentle and gradual.

Dry heat blocks may be available in clinical laboratories since dry heat can be used for incubation and activation of microbial cultures, for enzyme reactions, and when performing molecular analysis. However, dry heat blocks are not recommended for thawing frozen plasma samples because they provide a direct source of heat to the plasma sample. To my knowledge, published studies are not available that compare the impact on the integrity of plasma samples of thawing frozen plasma samples on dry heat blocks versus thawing in a 37°C water bath.

- Adcock Funk DM, Lippi G, Favaloro EJ. Quality standards for sample processing, transportation, and storage in hemostasis testing. *Semin Thromb Hemost.* 2012;38(6):576–585.

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Q. I am employed at two different hospitals and we participate in the same proficiency testing challenges. Can I perform the testing on samples at one facility and then also perform them at the other facility I work at?

A. Each laboratory must have a proficiency testing policy that clearly prohibits interlaboratory communication until after the deadline for submission. In addition, each laboratory must have written procedures for the proper handling of proficiency testing specimens and the reporting of the results. Personnel who perform proficiency testing at multiple CAP sites must maintain confidentiality between the two organizations, just as patient confidentiality is protected. If possible, personnel should avoid analyzing the same proficiency testing samples from the same mailing at different laboratories to avoid the potential for interlaboratory communication. Due to strict prohibition of interlaboratory communication, proficiency testing results must be entered only at the physical site at which testing was performed. If personnel test the same proficiency testing specimens at more than one laboratory, they must carefully follow all proficiency testing policies and procedures and personally attest to the proper handling of the proficiency testing samples.

- Clinical and Laboratory Standards Institute. *Using Proficiency Testing and Alternative Assessment to Improve Medical Laboratory Quality,* Third Edition (QMS24). Sept. 2016.
- Clinical laboratory improvement amendments of 1988; final rule. *Fed Regist.* 1992; 57(40):7146. USC 42 CFR §493.801(b).

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