

$$\frac{\text{Number of acceptable responses for the analyte}}{\text{Total number of challenges for the analyte}} \times 100 = \text{Analyte score for the testing event}$$

(5) To determine the overall testing event score, the number of correct responses for all analytes must be averaged using the following formula:

$$\frac{\text{Number of acceptable responses for all challenges}}{\text{Total number of all challenges}} \times 100 = \text{Testing event score}$$

[57 FR 7151, Feb. 28, 1992, as amended at 58 FR 5229, Jan. 19, 1993; 68 FR 3702, Jan. 24, 2003]

**§ 493.937 Toxicology.**

(a) *Program content and frequency of challenge.* To be approved for proficiency testing for toxicology, the annual program must provide a minimum of five samples per testing event. There must be at least three testing events at approximately equal intervals per year. The annual program must provide samples that cover the clinically relevant range of values that would be expected in specimens of patients on drug therapy and that cover the level of clinical significance for the particular drug. The samples may be provided through mailed shipments or, at HHS' option, may be provided to HHS or its designee for on-site testing.

(b) *Challenges per testing event.* The minimum number of challenges per testing event a program must provide for each analyte or test procedure is five serum, plasma, or blood samples.

*Analyte or Test Procedure*

Alcohol (blood)	Phenytoin
Blood lead	Primidone
Carbamazepine	Procainamide
Digoxin	(and metabolite)
Ethosuximide	Quinidine
Gentamicin	Theophylline
Lithium	Tobramycin
Phenobarbital	Valproic Acid

(c) *Evaluation of a laboratory's analyte or test performance.* HHS approves only those programs that assess the accuracy of a laboratory's responses in accordance with paragraphs (c)(1) through (4) of this section.

(1) To determine the accuracy of a laboratory's responses for quantitative toxicology tests or analytes, the program must compare the laboratory's response for each analyte with the response that reflects agreement of either 80 percent of ten or more referee laboratories or 80 percent or more of all participating laboratories. The score for a sample in toxicology is the score determined under paragraph (c)(2) of this section.

(2) For quantitative toxicology tests or analytes, the program must determine the correct response for each analyte by the distance of the response from the target value. After the target value has been established for each response, the appropriateness of the response must be determined by using fixed criteria based on the percentage difference from the target value

*Criteria for Acceptable Performance*

The criteria for acceptable performance are:

Analyte or test	Criteria for acceptable performance
Alcohol, blood .....	Target Value ±25%.
Blood lead .....	Target Value ±10% or 4 mcg/dL (greater).
Carbamazepine .....	Target Value ±25%.
Digoxin .....	Target Value ±20% or ±0.2 ng/mL (greater).
Ethosuximide .....	Target Value ±20%.
Gentamicin .....	Target Value ±25%.
Lithium .....	Target Value ±0.3 mmol/L or ±20% (greater).
Phenobarbital .....	Target Value ±20%.
Phenytoin .....	Target Value ±25%.
Primidone .....	Target Value ±25%.
Procainamide (and metabolite) .....	Target Value ±25%.
Quinidine .....	Target Value ±25%.
Tobramycin .....	Target Value ±25%.
Theophylline .....	Target Value ±25%.

**Centers for Medicare & Medicaid Services, HHS**

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Analyte or test	Criteria for acceptable performance
Valproic Acid .....	Target Value ±25%.

(3) To determine the analyte testing event score, the number of acceptable analyte responses must be averaged using the following formula:

$$\frac{\text{Number of acceptable responses for the analyte}}{\text{Total number of challenges for the analyte}} \times 100 = \text{Analyte score for the testing event}$$

(4) To determine the overall testing event score, the number of correct responses for all analytes must be averaged using the following formula:

$$\frac{\text{Number of acceptable responses for all challenges}}{\text{Total number of all challenges}} \times 100 = \text{Testing event score}$$

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**§ 493.941 Hematology (including routine hematology and coagulation).**

(a) *Program content and frequency of challenge.* To be approved for proficiency testing for hematology, a program must provide a minimum of five samples per testing event. There must be at least three testing events at approximately equal intervals per year. The annual program must provide samples that cover the full range of values that would be expected in patient specimens. The samples may be provided through mailed shipments or, at HHS' option, may be provided to HHS and or its designee for on-site testing.

(b) *Challenges per testing event.* The minimum number of challenges per testing event a program must provide for each analyte or test procedure is five.

*Analyte or Test Procedure*

- Cell identification or white blood cell differential
- Erythrocyte count
- Hematocrit (excluding spun microhematocrit)
- Hemoglobin
- Leukocyte count
- Platelet count
- Fibrinogen
- Partial thromboplastin time
- Prothrombin time

(1) An approved program for cell identification may vary over time. The types of cells that might be included in an approved program over time are—

- Neutrophilic granulocytes
- Eosinophilic granulocytes
- Basophilic granulocytes
- Lymphocytes
- Monocytes
- Major red and white blood cell abnormalities
- Immature red and white blood cells

(2) White blood cell differentials should be limited to the percentage distribution of cellular elements listed above.

(c) *Evaluation of a laboratory's analyte or test performance.* HHS approves only those programs that assess the accuracy of a laboratory's responses in accordance with paragraphs (c) (1) through (5) of this section.

(1) To determine the accuracy of a laboratory's responses for qualitative and quantitative hematology tests or analytes, the program must compare the laboratory's response for each analyte with the response that reflects agreement of either 80 percent of ten or more referee laboratories or 80 percent or more of all participating laboratories. The score for a sample in hematology is either the score determined under paragraph (c) (2) or (3) of this section.

(2) For quantitative hematology tests or analytes, the program must determine the correct response for each