§ 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.

(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:

<table>
<thead>
<tr>
<th>Analyte or test</th>
<th>Criteria for acceptable performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol, blood</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Blood lead</td>
<td>Target Value ±10% or ±4 mcg/dL</td>
</tr>
<tr>
<td>Carbamazepine</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Target Value ±120% or ±0.2 ng/mL</td>
</tr>
<tr>
<td>Ethosuximide</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>Target Value ±20% or ±0.3 mmol/L or±20% (greater)</td>
</tr>
<tr>
<td>Lithium</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Phenobarbital</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Phenobarbital (and metabo-</td>
<td></td>
</tr>
<tr>
<td>lites)</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Quinidine</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Tobramycin</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Theophylline</td>
<td>Target Value ±25%</td>
</tr>
<tr>
<td>Valproic Acid</td>
<td>Target Value ±25%</td>
</tr>
</tbody>
</table>

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

\[
\text{Testing event score} = \frac{\text{Number of acceptable responses for all challenges}}{\text{Total number of all challenges}} \times 100
\]
(4) To determine the overall testing event score, the number of correct responses for all analytes must be averaged using the following formula:

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

§ 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—

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 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 is determined using either fixed criteria based on the percentage difference from the target value or the number of standard deviations (SDs) the response differs from the target value.