CLIA Corner

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In This Issue...

A Checklist for Test System/Method Verification Process

NEW

When the laboratory introduces a new test system or method, it is responsible for verifying or establishing the performance specifications prior to reporting patient test results. For non-waived tests and test systems that have been approved or cleared by the Food and Drug Administration (FDA), the laboratory must verify the manufacturer's performance specifications for accuracy, precision, reportable range and reference intervals. For any test or test system that the FDA has not cleared or approved, the laboratory must establish the performance specifications for accuracy, precision, reportable range, reference intervals, as well as, sensitivity and specificity. Although test systems that the FDA has categorized as waived are not subject to the verification process under the CLIA regulations, it is a good laboratory practice to validate the test system prior to reporting patient test results and may be a requirement if your laboratory is inspected by one of the accreditation agencies (e.g. College of American Pathology, COLA, The Joint Commission, etc.).

The checklist we have provided is for non-waived, FDA-approved or cleared tests and test systems since these are most commonly used in clinical laboratories. The verification process is required whether the test system produces quantitative or qualitative results. By following the checklist, your laboratory will ensure that the test system performs within the specifications established by the manufacturer.

REPLACEMENT

When a temporary replacement (loaner) instrument is received which is identical (i.e. same make and model, and method for the same analyte or test) to the instrument which is being replaced, the laboratory must verify comparable performance by comparing, at a minimum, results of two or more levels of controls and either previously tested proficiency samples or previously tested patient specimens.

RELOCATION

Each laboratory is responsible for determining that the performance specifications for each test system are not affected by the relocation of the laboratory or test system. Refer to the manufacturer's package insert or operator's manual regarding critical requirements such as set-up, limitations, environmental conditions, etc.

CHECKLIST

The checklist outlines the steps to take in order to meet the CLIA requirements for verifying the performance specifications for a test system or method. Refer to attachment.

SUMMARY

Planning and executing a comprehensive verification process ensures that the laboratory is meeting all regulatory requirements, as well as, reporting accurate and reliable test results.

For more information regarding the CLIA requirements pertaining to the verification of performance specifications, go to www.cms.gov/CLIA and click on the link for Interpretative Guidelines, Subpart K, Part 1, §493.1253 (D5419-D5425) or CLIA Brochures, Brochure #2, Verification of Performance Specifications.

REFERENCES

Clinical Laboratory Institute Standards (CLSI) document EP5-A2—Evaluation of Precision Performance of Quantitative Measurement Methods; Approved Guideline-Second Edition (ISBN 1-56238-542-9).

CLSI document EP12-A—User Protocol for Evaluation of Qualitative Test Performance; Approved Guideline (ISBN 1-56238-468-6).

CLSI document EP15-A2—User Verification of Performance for Precision and Trueness; Approved Guideline-Second Edition (ISBN 1-56238-574-7).

State Operations Manual, Appendix C- Survey Procedures and Interpretative Guidelines for Laboratories and Laboratory Services; Centers for Medicare and Medicaid Services (CMS); published January 12, 2004.

CMS Brochure #2: Verification of Performance Specifications; published February 2004.

CHECKLIST FOR VERIFICATION OF PERFORMANCE SPECIFICATIONS

For Non-Waived, Non-Modified FDA-Cleared or Approved Test Systems

◊ **Plan the Verification Process**

- o Objective – to assure that the test, when used in your laboratory by your testing personnel for your patient population, is performing as the manufacturer intended.
- o Study Design – overview of the process/procedure that will be used to verify the performance specifications of the test system.
  - The requirement applies when the laboratory replaces a test system or instrument (with the same model or a different model); adds a new test; or changes the manufacturer of a test kit.
  - If multiple instruments (including the same make and model) are introduced, the performance specification must be verified for each instrument.
- o Materials & Methods
  - Method to obtain specimens/samples.
  - Number of specimens to test for the study. This will depend on the test system and the laboratory's testing volumes. The actual number of specimens needed for each part of the verification study may vary.
  - Actual test procedure itself – use the manufacturer's instructions and guidelines.
  - Procedure for resolving discrepant results, or addressing additional means to meet criteria (e.g. increasing the sample size if necessary).
- o Acceptance Criteria
  - Prior to initiation of the study, acceptance criteria must be established for each performance characteristic. The laboratory director (or designee) needs to approve these criteria before proceeding.
  - If comparing two like methodologies, accuracy may achieve 100% - all specimens should agree. However, if comparing two different methodologies, it would be unrealistic to set the accuracy performance characteristic at 100%.
- o Evaluation -- summary of the results from the study
  - It documents how well the test system performed in each of the performance characteristics and is used to determine whether to approve or reject the new test system.

◊ **Performance Characteristics**

- o Accuracy – compares the accuracy of the test results obtained by the laboratory when using a test system with the manufacturer's claims. This can be done by testing:
  - commercially available calibrators/calibration and quality control materials with known values;
  - proficiency testing materials that have established values; and
  - Previously tested patient specimens with established values.

  If test results for these specimens/samples fall within the manufacturer's stated acceptable limits, accuracy is verified.
- o Precision – verifies that the laboratory can repeatedly test the same samples on the same day and on different days, and get the same or comparable results (reproducible), regardless of which member of the laboratory's testing personnel performs the test (operator variance).
- o Reportable Range of Test Results – verifies the manufacturer's established reportable range for the test.
  - Choose samples with known values at the highest and lowest levels the manufacturer claims accurate results can be produced by the test system.
  - The laboratory may only report patient test results that fall within the verified levels.
  - The test procedure must include how the laboratory will report results that are greater than the highest verified level or less than the lowest verified level.

- o Reference Intervals – establishes normal range(s) for laboratory's patient population.
  - Can use manufacturer's suggested reference range(s) or other published reference ranges from a textbook or a journal publication.
  - Reference ranges may vary based on the type of patient (e.g., pediatric, male, female).
  - Over time, the laboratory may need to adjust its reference range(s) to better fit the patient population(s) it routinely tests.
  - When the laboratory tests known normal patients, the results should be within established reference range. With abnormal patients, the laboratory should expect results outside the reference range.
- o Calibration & Control Procedures – establishes the calibration and/or quality control frequency.
  - For calibration procedures, follow manufacturer's instructions. If manufacturer does not specify any, the laboratory must establish them.
  - For control procedures, follow the more stringent requirements of either the manufacturer's instructions or CLIA regulations.

◊ **Procedure Manual**

- o A written procedure, approved by the laboratory director, must be in place prior to reporting patient test results. The manufacturer's operator's manual or package insert may be used as the procedure as long as the laboratory adds any component of the procedure not provided by the manufacturer.

◊ **Laboratory Information System (LIS) and Test Reporting Systems**

- o If the LIS performs any calculations to determine a laboratory result, the calculations must be verified immediately after the LIS is programmed and prior to initial calculation of patient results.
- o Ensure that the test reporting system (manual/paper or electronic) has been updated, if applicable, with appropriate units of measurements, reference ranges, flags or alerts , and interpretation comments.

◊ **Training & Competency Documentation**

- o The activities of the verification process may also be used to meet the personnel requirements for training and competency.
- o All operators, whether they participated in the process or not, must have training and competency documented.

◊ **Documentation Review and Approval by Laboratory Director/Designee**

- o If the verification studies are approved, the laboratory may begin using the test system for routine testing and reporting of patient test results.
- o If the study results indicate that the test is not accurate or results cannot be consistently reproduced, the laboratory's technical consultant and the test system manufacturer should be consulted regarding steps to resolve the problem.

◊ **Proficiency Testing Enrollment**

- o If the laboratory performed the test(s) in the past, remember to change the test method/system when reporting your next proficiency testing results.
- o If the test(s) are new to the laboratory test menu and are listed as regulated by CLIA, the laboratory must enroll in an approved proficiency testing program. If the test(s) is new, but non-regulated by CLIA, the laboratory must verify accuracy twice annually.
- o The laboratory must notify the state CLIA program or its accreditation organization with additions or deletions to its test menu within six months of the change.