Department of Veterans Affairs

Office of Inspector General

AUDIT OF
PATHOLOGY AND LABORATORY
MEDICINE SERVICE'S
LABORATORY MANAGEMENT
INDEX PROGRAM (LMIP)

> *Reported National Laboratory Workload Data Was Reasonably Accurate, But Was Not Complete*

Report No.: 8R3-A01-085

Date: March 25, 1998

Office of Inspector General
Washington DC 20420

Memorandum to the Under Secretary for Health (10)

Audit of Pathology and Laboratory Medicine Service's
Laboratory Management Index Program (LMIP)

1. The Office of Inspector General conducted an audit of the completeness and reliability of the data in the Veterans Health Administration's (VHA) Pathology and Laboratory Medicine Service's (PLMS) workload reporting system, the Laboratory Management Index Program (LMIP). The LMIP accumulates national laboratory workload data from 151 medical centers. During the 12-month period, August 1996 through July 1997, LMIP reported that VHA had accomplished approximately 105 million tests. This audit is the third in a series of PLMS audits intended to provide an overall assessment as to whether pathology and laboratory services are provided in an economical and efficient manner.

2. The audit showed that, while workload data reported to the LMIP was generally accurate, it was not complete because an average of nine VA medical centers did not report their workload every month. Although the VHA's data validation process identified some non-reporting facilities, procedures in use did not identify all non-reporting facilities each month, nor ensure that missing data was later entered into the system. We also found that one of the system controls used to test the accuracy of data, the National List of Tests, was allowing inappropriate items to be reported as tests. Although non-test items comprised only two percent of the reported workload data, PLMS should optimize the LMIP accuracy rate by improving the automated controls in the computer system.

3. We estimate that PLMS may be underreporting national laboratory workload by as much as 7 million tests per year, representing program costs estimated at more than $5 million per year. Better workload reporting would improve the utility of workload information.

4. We recommend that the Under Secretary for Health take action to:

    a.   Ensure that all VHA medical centers report LMIP data monthly, as required.

    b.   Purge the National List of Tests of all items that are not LMIP reportable tests.

5. You concurred with the finding and recommendation in the report and provided an acceptable action plan. Therefore, we consider the issues discussed in the report to be resolved, based on actions taken or planned. However, we will continue to follow up on planned actions until they are completed.

For the Assistant Inspector General for Auditing

(Original signed by)
JAMES R. HUDSON
Director, Atlanta Operations Division

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RESULTS AND RECOMMENDATION

Strengthening Controls Over the Laboratory Management Index Program Could Ensure Greater Data Reliability

The Office of Inspector General performed an audit of the data in the Veterans Health Administration's (VHA) Pathology and Laboratory Medicine Service's (PLMS) workload reporting system, the Laboratory Management Index Program (LMIP). The purpose of the audit was to determine whether the data reported was accurate and complete. This audit is the third in a series of PLMS audits intended to provide an overall assessment as to whether pathology and laboratory services are provided in an economical and efficient manner.

The audit showed that, while workload data reported to LMIP was generally accurate, it was not complete because not all VA medical centers (VAMCs) were reporting. This occurred because VHA's LMIP system controls needed strengthening to improve data reliability. We estimate that PLMS may be underreporting workload by almost 7 million tests per year, representing program costs of over $5 million per year.

The National Validation Process Generally Ensured the Accuracy of the Data

In August 1996, PLMS program officials instituted a validation effort that was generally effective in identifying and resolving problems with VAMCs reporting inappropriate items as tests. To determine the degree of accuracy of tests reported, we audited a random sample of 1.3 million items submitted to the LMIP system by 21 VAMCs for July 1997[1]. We reviewed the data with the National Validation Coordinator to assess the validity of each test reported. The analysis showed that 98 percent of the items were reportable tests.

We also reviewed the validation process used to identify VAMCs submitting questionable data, the files documenting VAMC contacts and the resolution of identified reporting problems. Although data from all VAMCs had not yet been verified at the time of our audit, we concluded that the validation process was generally an effective method for identifying and resolving inaccurate reporting. During the course of the audit, program officials assured us that the validation process would be expanded to ensure that they reviewed LMIP data submitted by each VAMC for accuracy.

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[1] We did not compare tests performed at individual VAMCs with tests reported to LMIP because workload data was automatically captured by the laboratory computer system. Local laboratory staff programmed the computer to report those items they determined to be tests, based on LMIP instructions.

Although we found that the workload data submitted to the LMIP (Austin) national database was generally accurate, PLMS should optimize accuracy by improving data system controls (edits). The Austin database, which contains edits to filter out inaccurate information submitted by VAMCs, rejects such items as incorrect VAMC station numbers, the use of text for items requiring numbers, and non-reportable tests. An edit filters and rejects non-reportable items by comparing the workload codes[2] and test names submitted by VAMCs with the National List of Tests (NLT) in the Austin computer system. Those workload codes and test names not listed on the NLT are rejected by the system.

However, our review showed that the NLT contained items from the prior reporting system, known as AMIS (Automated Management Information System), that were no longer reportable under LMIP. We identified 172 items that were not reportable tests, as defined by the LMIP User's Guide and the LMIP National Validation Coordinator. Therefore, the system edit was allowing the LMIP system to accept inappropriate items as workload. Reviewing and purging the NLT of all non-reportable items should optimize the LMIP accuracy rate.

The National Validation Process Should Routinely Monitor LMIP Data for Completeness

While the LMIP data was generally accurate, we found that it was not complete because not all VAMCs were reporting required data to either the national LMIP data base in Austin or to the National Automated Data Processing (ADP) Coordinator in Dallas. The audit showed that an average of nine VAMCs were reporting data sporadically, or were not reporting at all. This was because there was no formal process to ensure that all VAMCs reported monthly to the Austin and Dallas databases. Based on our audit results, we concluded that PLMS may be underreporting laboratory workload by as much as 7 million tests per year[3], representing program costs of over $5 million per year.

The audit showed that two VAMCs were not reporting data to either the LMIP data base in Austin or the PLMS database in Dallas. We also found that other VAMCs did not report regularly from January through July 1997. For example:

- Three VAMCs did not report any data to Austin. An average of nine VAMCs per month did not transmit LMIP data to Austin.

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[2] The workload code designates the specific test that was performed.

[3] 105 million tests reported for 12 months (August 1996 through July 1997) divided by 142 reporting VAMCs on average equals 740,000 tests per VAMC, times 9 non-reporting VAMCs equals 6.66 million tests, or almost 7 million tests underreported per year.

- Ten VAMCs did not report any data to Dallas. An average of 20 VAMCs per month did not transmit LMIP data to Dallas.

Although the data validation process identified some of the non-reporting VAMCs, the procedures in use did not ensure that all VAMCs were reporting, nor that the missing data was later captured. We also concluded that more action should have been taken to ensure that non-reporting VAMCs began participating in the LMIP process. As a result of our audit, PLMS program officials planned to strengthen controls over the LMIP program.

Conclusion

The audit showed that while LMIP was generally accurate, it was not complete because some VAMCs reported workload data sporadically, or did not report at all. As a result, PLMS may be underreporting workload by as much as 7 million tests a year, which represents program costs estimated at more than $5 million per year. We also found that improved controls in the Austin database system should increase data accuracy. Enhanced monitoring of LMIP reporting, and additional controls in the computer system, would ensure that the database contained all workload specified as appropriate by LMIP instructions.

Recommendation

We recommend that the Under Secretary for Health take action to:

a. Ensure that all VHA medical centers report LMIP data monthly, as required.

b. Purge the National List of Tests of all items that are not LMIP reportable tests.

Comments of the Under Secretary for Health

The Under Secretary for Health concurred with the recommendation and agreed with the underreporting estimate of 7 million tests and the potential dollar impact of $5 million, although he stressed that this represented only 6 percent of the workload. He is taking specific action to ensure that all medical centers are reporting, and to improve system edits to further refine LMIP accuracy.

(Comments of the Under Secretary for Health are provided in their entirety in APPENDIX III.)

Implementation Plan

Recommendation a: A full-time program analyst will be designated in March 1998 to provide continuing oversight of the program, and to ensure that all facilities are reporting monthly, as required.

Recommendation b: Action will be taken in March 1998 by computer programming staff to strengthen computer controls and to implement an additional edit to flag unreportable tests.

Office of Inspector General Comments

The Under Secretary for Health's implementation plans are responsive to the intent of our report recommendation and we consider the report issues resolved. We will follow up on planned actions until they are completed.

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The audit was conducted as part of the Office of Inspector General's continuing audit coverage of the Veterans Health Administration's Pathology and Laboratory Medicine Service (PLMS). The purpose of the audit was to test the reliability of the data in the workload reporting system, the Laboratory Management Index Program (LMIP), to determine whether it was accurate and complete.

Scope

The scope of our audit included workload data reported to the LMIP system from August 1996 through July 1997, the most recent 12-month period. During that time, VA laboratories reported performing more than 105 million tests. Specifically, we audited items in the LMIP database to determine whether they were reportable tests, as defined by PLMS instructions. We did not compare tests performed at individual VA medical centers (VAMCs) with tests reported because most workload data was automatically captured by each laboratory's computer system. Local Automated Data Processing (ADP) Coordinators programmed the computer system to transmit to Austin those items determined to be reportable tests, based on LMIP instructions. Our visits to 10 VAMCs during the audit showed no indication that the numbers of tests automatically captured, or manually entered, were inaccurate.

In order to obtain an understanding of relevant system controls, we examined PLMS policies, procedures, and guidelines. We interviewed and obtained information from local laboratory staff and ADP Coordinators responsible for LMIP reporting at two VAMCs. These sites were judgmentally selected because key decentralized program officials were located there. We also obtained information from the PLMS National ADP Coordinator in Dallas, the LMIP Coordinator in Austin, and the National Validation Coordinator.

To achieve the assignment's objective, we audited the computer-processed data contained in the LMIP national database. Our review of system controls and the results of data tests showed an approximate six percent error rate in the completeness of the database.

The audit was made in accordance with generally accepted Government Auditing Standards.

Methodology

We compared the Austin and Dallas national databases to determine whether they contained the same workload data. We then analyzed a random sample of workload data submitted for July 1997 by 21 VAMCs[4] to determine whether the items in the LMIP system were appropriately reported as tests. The sample was selected from a universe of 125 VAMCs that submitted workload information to the Dallas database for that period[5], which was the most current month available. The 21 VAMCs reported a total of 1.3 million tests in July 1997 (11 percent of the 11.8 million tests reported nationwide). We reviewed the data with the National Validation Coordinator to determine whether each item submitted was a reportable test.

We compared the test names and associated workload codes in the Dallas national database for July 1997 with the National List of Tests to assess the accuracy of the data. We examined information in the database to ensure that it was in compliance with PLMS reporting instructions. We tested the national databases for completeness by analyzing whether all VAMCs submitted the required workload data to the Austin and Dallas national databases. We also analyzed the National List of Tests to determine whether the workload codes and test names were reportable tests, as defined by LMIP instructions.

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[4] We originally requested data from 25 VAMCs, but 4 of these VAMCs had not submitted data for that month.

[5] There are 151 VA medical centers that should be reporting LMIP workload data. The parent hospital reports for all divisions, integrated facilities, outpatient clinics, and any other laboratories under their purview.

BACKGROUND

As of October 1, 1995, Pathology and Laboratory Medicine Service (PLMS) replaced the Automated Management Information System (AMIS) for workload reporting with the Laboratory Management Index Program (LMIP). AMIS measured workload based on the time necessary to perform the various activities required to obtain a test result, and was reported as weighted work units. All information for AMIS was collected manually, using tally sheets located next to each test instrument. All other information, such as the number of specimens procured, and the number of tests sent to outside laboratories, were tracked, calculated by various time factors, and totaled for entry on the tally sheets. AMIS was time consuming and labor intensive, and produced results that were reported to be inaccurate.

LMIP uses information in the Decentralized Hospital Computer Program (DHCP), the VA's hospital computer system, and requires very few manual entries or adjustments. LMIP automatically captures about 85 percent of the workload data by a software interface with the laboratory testing equipment. The remaining 15 percent are manually entered into the system, allowing tests to be counted that are performed on equipment not interfaced with DHCP, or in laboratory areas that are not highly automated, such as microbiology.

LMIP measures workload by the number of test results produced, or "reportable tests." Activities that consume resources, but do not generate test results, are not counted as workload. These activities, which are considered overhead, include such items as quality control and repeat testing, calculations, and instrument setup. Although the local database may contain these items for purposes of studies and analyses of laboratory operations, only tests defined as reportable were to be transmitted to the national database. Using LMIP instructions, local laboratory staff determined which items in their computer system were reportable tests. VA medical center (VAMC) Automated Data Processing (ADP) Coordinators then programmed the medical center computer system to transmit to Austin those items designated as reportable tests.

After validating the workload data, each VA laboratory electronically transmits the data monthly to both the national database at the Austin Automation Center, and to the PLMS National ADP Coordinator in Dallas. The Austin database edits and compiles the data to generate a monthly summary report for each reporting VAMC. The Dallas database, which was initially implemented to debug the system of data transmission problems, does not contain edits like those in the Austin database. This allows the National Validation Coordinator to review unfiltered data from VAMCs to determine the cause of inaccurate reporting. PLMS program officials plan to eliminate the Dallas database after all data is validated and reporting problems are resolved.

COMMENTS OF THE UNDER SECRETARY FOR HEALTH

Department of
Veterans Affairs
Memorandum

Date: Mar 9, 1998

From: Under Secretary for Health (10)

Subj: OIG Draft Report: *Audit of Pathology and Laboratory Medicine*
          Service's Laboratory Management Index Program (LMIP)

To: Assistant Inspector General for Auditing (52)

1. The above-referenced report has been reviewed by involved VHA program offices and we concur in the findings and recommendations. Your generally positive assessment of the LMIP's completeness and reliability reflects the progress that VHA continues to make in improving the capabilities of our data management systems. We were especially pleased to note your finding that reported workload data are 98% accurate. We also agree with OIG's estimates of underreporting (7 million tests) and potential dollar impact ($5 million), although it should be stressed that these estimated figures represent only a 6% underreporting rate that occurred during the start-up phase of LMIP. Based on the strength of these initial implementation achievements, we are confident that the system will meet our expectations.

2. At the same time, we recognize opportunities for improvement, particularly in relation to oversight monitoring to assure full facility compliance with reporting requirements. As we state in the attached action plan, Pathology and Laboratory Medicine Service is in the process of designating a full-time program analyst to provide continuing oversight of the LMIP program. The validation process will also address technical concerns you raise about purging selected unreportable LMIP items contained in the National List of Tests (NLT). As we state in our action plan, however, it is important to note that the NLT is a national data repository that is also utilized by program elements outside of LMIP. Therefore, all non-reportable LMIP items cannot be purged from the listing. Since items included in the NLT are in a constant state of flux, the purging process is an ongoing responsibility of IRM staff. Actions will be taken, however, to devise improved system edits to further refine LMIP accuracy.

3.   Thank you for the opportunity to review this report. If additional information is required, please contact Paul C. Gibert, Jr., Director, Management Review and Administration Service (105E), Office of Policy and Planning (105), at 273.8355.

/s/
Kenneth W. Kizer, M.D., M.P.H.

Attachment

COMMENTS OF THE UNDER SECRETARY FOR HEALTH

Action Plan in Response to OIG/GAO/MI Audits/ProgramEvaluations/Reviews

Name of Report: OIG Draft Report: ***Audit of Pathology and Laboratory Medicine Service's Laboratory Management Index Program (LMIP)***

Report Number: Project No. 7R3-132
Date of Report: undated

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Recommendations/ Actions	Status	Completion Date

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1. **We recommend that the Under Secretary for Health take action to:**

a. **Ensure that all VHA medical centers report LMIP data monthly, as required.**

Concur

As OIG reports, VHA continues to take steps to enhance and expand the data validation process and assure that all medical centers fully comply with reporting requirements. Efforts are currently underway to designate a full-time FTE program analyst, decentralized to VAMC Hines, IL, to provide continuing oversight of this program, including tracking of monthly LMIP data reports by facilities. Follow-up actions with any facility not meeting reporting mandates will be initiated as necessary.

                          In Process   March 1998 and Ongoing

b. **Purge the National List of Tests of all items that are not LMIP reportable tests.**

Concur

It is noted that the National List of Tests is used as a national repository for testing data that is accessed for purposes other than LMIP reporting. For that reason, all items not reportable to LMIP cannot be purged. Tests are added to and purged from the National List on an regular basis, so maintenance of a current list is an ongoing responsibility for computer programming staff located in the IRM field office in Dallas, Texas. The individual assigned this responsibility is aware of the need to strengthen computer controls and will take steps to implement an additional edit to flag unreportable tests. The new oversight coordinator of the LMIP will assist in facilitating needed software modifications to minimize inclusion of inappropriate items in the LMIP database.

                          In Process   March 1998 and Ongoing

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