

# Evaluation of Lab Request and Report Formats Completeness and its Advantage for Both Health Professionals and Patients in a Health Center, Addis Ababa, Ethiopia

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## Abstract

**Background:** Laboratory requests and laboratory reports are forms used as a communication instrument between physicians and laboratory professionals. These two forms have their own parameters to be a complete form of communication. Aim of the study was to assess the completeness of laboratory request and laboratory report forms in Janmeda Health Center, Addis Ababa, Ethiopia.

**Method:** A prospective study was conducted from July 10, 2017, to January 23, 2018, on a total of 5200 laboratory requests and related 5200 laboratory report forms. Data were analyzed using SPSS software.

**Results:** 77.37 % of requests and 87.15% of report formats were fully completed with all patient demography indicator characteristics and a high gap is identified in the completion of physician and laboratory professional indicators.

**Conclusion:** According to this study, most of the information in both lab requests and lab report forms were not completed and this has greater impacts on the TAT of each test. Therefore, to fill this gap all information about the advantage of all parameters in both formats must be clearly explained to all health professionals.

**Keywords:** Completeness; Janmeda; Lab report; Lab-request

**Abbreviations:** ART: Anti-Retroviral Therapy; FMOH: Federal Ministry of Health; ICMJE: International Committee of Medical Journal Editors; IQC: Internal Quality Control; Lab: Laboratory; OPD: Out Patient Department; PCIS: Patient Care Information Systems; SLMTA: Strengthening Laboratory Management Toward Accreditation; SPSS: Statistical Package for Social Sciences; TB: Tuberculosis Bacteria; WHO: World Health Organization

## Introduction

Laboratory (Lab) requests and laboratory reports form are used as a communication instrument between physicians, lab workers, patients, and other health professionals. These two forms have their own indicators to be a complete form of communication and the indicators can be classified as patient information indicators, physician indicators and lab professional indicators [1]. The completeness of both lab request and lab report forms has their own greater advantage for patients especially for the identification of the true patient for

that request and the true request to the necessity diseases of the patient. Also completeness of all information's both in lab request and lab report form have greater advantage for the identification of the physician who requested the test, the lab technologist who did the test, when the test was requested, when the test was done, by what method the test was done and who verify the quality of the test to address true and quality result to the patient [2-4].

Both lab request and report forms are said to be complete, if and only if they have contained the following two basic indicators with

their characteristics. The first one is patient-related information's like; patient name, age, sex, card no, location /OPD no/, patient history, specimen type and type of test and the second one is requester related information's like name of requester, the signature of the requester, the profession of requester and date and time of the request. Lab report form must also contain criteria's like by whom the test is done, a signature of the lab worker who does the test, test method, verifier name and signature, report date and report time, IQC result, an instrument no, comment to physicians if necessary [1,5].

Generally, completeness of both lab requests and lab reports has a greater advantage for both the physician and the lab worker to communicate and to identify the gap equally with the patient to decrease the prevalence of diseases in the country [1-3].

An assessment done in different parts of the country and most of health facilities with Federal Ministry of Health (FMOH) in collaboration with World Health Organization (WHO) showed that most of lab requests and lab report forms are not fully completed and this cause to increase in turnaround time for each test and also formation of information gaps between physicians and lab personnel's additional with its high cause to error formation in results of patient [4,6,7].

A research done in India using the paper and electronic methods of format formulation on a total of 4785 unique reports for 53 different conditions showed that only half of the reports were completed and also the study finding shows that using electronic laboratory reporting improves the completeness and timeliness of disease surveillance, which will enhance public health awareness and reporting efficiency [8]. Another study done in Cameron Northwestern University Feinberg School of Medicine shows that out of 478 incomplete lab reports and lab requests only 123 (25.73%) has exact timeliness, but from a total of 500 fully completed lab requests and lab reports 403 (80.65%) was released within their TAT according to WHO reports [9].

The International Committee of Medical Journal Editors (ICMJE) recommended that each data needed in both formats must be fulfilled correctly in order to transfer the full information to the third body and also to decrease the medical error that happened due to information gaps between physicians and any other health professionals. ICMJE also recommends that completeness of both lab request and lab report formats have a greater role in decreasing TAT of each result and for an increase in customer satisfaction [10-12].

Study done in nine public hospitals at Addis Ababa, Ethiopia and Patients' satisfaction towards laboratory services was assessed using exit interview structured questionnaire involving a total of 406 clients on hospital-based, descriptive cross-sectional study from October to November 2010 showed that the overall satisfaction rate of patient was 85.5% with measures taken by health care providers to keep confidentiality, fully completion of patient information and ability of the person drawing blood to answer question (98.3%, 78%, and 96.3% respectively) [13].

The main aim of this study was to evaluate the completeness of lab request and report forms and identifying its advantage for both health professionals and patients in the Janmeda health center, Addis Ababa, Ethiopia.

## Materials and Method

### Study design, setting and period

This was a prospective study conducted on randomly selected formats of a total of 5200 laboratory requests formats and related 5200

laboratory report distributed from Janmeda health center Laboratory sent to each OPD's, in the department of medical laboratory Sciences, Addis Ababa, Ethiopia in the period between July 10, 2017- to January 23, 2018. Janmeda health center is a governmental health center under Addis Ababa health bureau, Arada sub-city. This health center has its own separated laboratory request and laboratory report formats which have their own specific parameters formulated based on the health center laboratory physician manual and quality policy manual. In this health center, the laboratory requests sent from each OPD to the laboratory department are not directly returned to each OPD; instead, they store each request and use comparative laboratory report formats to report laboratory results of each patient who give a sample for analysis. All formats utilized by physicians, laboratory professionals, and patients during the study period were included in the study. Formats that are not used for diagnosis are not included in this study.

### Parameters of laboratory requests and laboratory report formats

Janmeda health center laboratory department has formulated quality policy manuals based on WHO and ISO 15189 standards and guidelines. These quality policies manual states the different parameters necessarily written in both formats in three categories lists as follows. The first category is patient-related information's like Patient name, age, sex, card no, location /OPD No, patient history, specimen type, and type of test. And the second category is requester related information's like name of requester, signature of requester, profession of requester, date and time of request and the last category is also called lab report format parameters like test done by, signature of the lab worker who do the test, test method, verifier name and signature, report date and report time, IQC result, Instrument No and Comment to physicians if necessary [14].

### Data collection

Information like patient-related information, information's like physician indicator and other information needed to be fulfilled by lab professionals were assessed by selecting one lab request and its corresponding lab report formats. The data is collected by the prospective methods by assessing pieces of information on the lab request during entry to the laboratory and its comparative lab report in the time of exit from the laboratory. All the needed information's in both formats was recorded before distributed to patients.

### Statistical analysis

After the collection of enough data for generalization depends on our resource data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 21.000 (IBM Statistics, USA).

### Ethical consideration

The study protocol was ethically approved by the Arada sub-city health bearuea and Janmeda health center. Data were collected after consent was obtained from both Arada sub-city health bureau and management of Janmeda health center.

### Limitation of the study

During conducting of this research there were some limitations like; loss of lab reports after we have collected data from its relative lab request, missing of patient identification cards in most requests, lack of relatively recent studies done of this before this and lack of human power to collect data were some of the basic obstacles during our data collection times in full of 7 months.

## Results

In our study, a total of 5200 laboratory requests and 5200 laboratory reports have been used for the assessment of the completing status of basic information indicated in both formats. Out of 5200 around 4023 (77.37 %) laboratory requests and 4532 (87.15%) laboratory report formats were fully completed with all patient demography indicator characteristics (Table 1).

As we have seen from the table out of 5200 laboratory requests sent to the laboratory department from different outpatient departments; the percentage of requests with card number, patient name, age of patient, sex, OPD, patient history, and type of test is 77.37, 100%, 76.67, 95.19, 80.2, 76.9 %, and 97% respectively; which shows good habit of completeness even if still there is a gap. According to the study finding the habit of writing the specimen, type accounts only 28.9% which is very low. Generally, this completion has a direct relation with the TAT of the test as shown in the following table.

Out of 1092 completed lab requests, 819 (75.24%) have done within stated TAT and the rest 273 (24.76%) have taken a longer time than stated TAT as the best TAT by Janmeda health center laboratory and SLMTA Standard. On the other hand, out of 4108 incomplete lab requests 2163 (52.66%) s were done within stated TAT and the rest of 1945 (47.34%) have taken more time; which indicates that incomplete lab requests have taken more time in the lab than that of the completed ones (Table 2).

Generally, the information in the lab request and lab report form must be written completely to address truly and quality results to patients and to decrease the prevalence of diseases in the country also in the world [7,15].

**Table 1:** Completeness of laboratory request format parameter included under Patient information according to Janmeda health center laboratory policy manual recommendation.

Patient Indicator	Frequency and Percent	
	COMPLETE (%)	INCOMPLETE (%)
Card No	4023 (77.37)	1177 (22.63)
Name of patient	5200 (100)	0 (0)
Age of patient	3987 (76.67)	1213 (23.33)
Sex of patient	4950 (95.19)	250 (4.79)
Location of patient	4171 (80.2)	1030 (19.8)
History of patient	4000 (76.9)	1200 (23.7)
Specimen type	1503 (28.9)	36.97 (71.1)
Type of test	5044 (97)	156 (3)

**Table 2:** Relationship between TAT and completeness of laboratory request format parameter included under Patient information according to Janmeda health center laboratory policy manual recommendation.

Patient Indicator	Complete lab requests		
	No of complete Lab request	Tests released within TAT (%)	Take longer time than the given TAT (%)
	1092	819 (75.24)	273 (24.76)
Patient Indicator	Incomplete lab requests		
	No of incomplete Lab request	Tests released within TAT	Take longer time than the given TAT
	4108	2163 (52.66)	1945 (47.34)

According to the study some information's found in the lab report forms like patient name, identification number, name and signature of the lab technologist who did the test, age and sex of a patient were fully completed, with minimal gap. The completion of other indicators like a comment to physicians, instrument number, test done method, IQC result, and verifier name and sign were very poor (11 %, 7%, 46.8%, 30.1% & 15.6% respectively). The incompleteness of lab reports is difficult for both patients and health workers to identify the gap and the responsible lab personnel who did the test and verify the result besides its effect on the quality of lab results. Here indicators like verifier name and signature are very important for all tests to get good and quality lab results, especially for patients because the error that happened during the analytical phase can be corrected by the verifier (Table 3).

Out of 5,200 questioners collected in the study period, only 23.8% of the physician wrote their names and sign the request paper. This incompleteness affects the communication between lab staff and the physician, especially in case of panic result which is the main thing for the management of emergency cases. Only 38.6% have date and time of the requests (Table 4). The date of a request has its own function to both customers and health workers to give attention to the tests and to give priority.

As shown in table 5, most incomplete lab requests have taken longer TAT than that of the completed ones. Knowing who, where and when the test was requested poses a lot of challenge which is time consuming. In numerical statistics, the number of test results released with stated TAT for completed and uncompleted lab request is 83.33% and 38.33% respectively. Here we can see that completing the lab requests and lab reports have a greater advantage for both health workers and patients.

## Discussion

Medical error reduction is an international issue. Most studies show that the implementation of patient care information systems (PCIs) is a potential means to reduce medical errors that happened due to the communication barrier between health professionals and customers [3-5,7,15,16].

According to our findings most of the lab request and lab report forms, information was not complete written which accounts for

**Table 3:** Completeness of laboratory report format parameter cited as main parameters according to Janmeda health center laboratory policy manual recommendation.

Lab report indicator	Absolute number and Percentage	
	Complete (%)	Incomplete (%)
Card No	4815 (92.6)	385 (7.4)
Name of patient	5156 (99.15)	44 (0.85)
Age of patient	5117 (98.40)	83 (1.6)
Sex of patient	5148 (99)	52 (1)
Test done by name and sign	4118 (79.20)	1082 (20.8)
Test method	2434 (46.8)	2766 (53.2)
Instrument No	364 (7)	4836 (93)
IQC result	1565 (30.1)	3635 (69.9)
Comment to physician	572 (11)	4628 (89)
Report date	2891 (55.6)	2309 (44.4)
Verifier name and sign	811 (15.6)	4389 (84.4)
Report time	2891 (55.6)	2309 (44.4)

**Table 4:** Completeness of laboratory request format parameter included under physician indicators according to Janmeda health center laboratory policy manual recommendation.

Total no of patient (5200)	Physician Indicator	Frequency and Percent	
		Complete (%)	Incomplete (%)
	Name of physician	2694 (51.8)	2506 (48.2)
	Signature of physician	1238 (23.8)	3962 (76.2)
	Date of request	2007 (38.6)	3193 (61.4)
	Profession of physician	333 (6.4)	4867 (93.6)

**Table 5:** Relationship between TAT and completion of laboratory requests forms based on physician identification parameters according to Janmeda health center laboratory physician handbook recommendation.

Physician Indicator	Complete lab requests		
	No of complete Lab request taken	Tests released within TAT (%)	Take longer time than the given TAT (%)
	312	260 (83.33)	52 (16.67)
Physician Indicator	Incomplete lab requests		
	No of incomplete Lab request taken	Test release within TAT (%)	Take longer time than the given TAT (%)
	1248	478 (38.33)	770 (61.67)

only 48.6% out of 5200 data considered. This result shows that there is a big knowledge gap about the function of different parameters or characteristics found on both laboratory request and laboratory report forms which are very necessary to all concerned bodies. Completely writing of all information in the lab forms is beneficial to both health workers and patients for ease in doing the test as well as getting good laboratory results [3-5].

From our results, only some of the laboratory request parameters like patient full name (100%), patient card number (91.6%), patient age (98.4%), patient sex (99%), patient location or OPD (80.2%) and type of test (97%) have good completion rate. But parameters like date and time of the request (38.6%), specimen type (11%), physician profession (6.4%) and patient history (0.8%) had very poor completion rates. Also, data collected from selected laboratory report forms shows that only parameters like patient card number, patient age, patient sex, and test y have been completed well.

As a general understanding that all information listed in both lab request and lab report forms have a greater function to all involve, each responsible person must complete all needed pieces of information in both formats.

According to the Janmeda health center laboratory department, different parameters for both formats based on their quality policy manual have been cited in the paper formats. It is expected that every responsible health professional who has trained in the hospitals, health centers and in any other health facility has to understand the advantage of completing the information in laboratory formats provide the complete information as indicated in the forms according to WHO recommendation and ISO 15189 standard guideline to address accurate results to customers.

## Conclusion

In this study, we observe that the completion of both lab requests and lab reports have a greater advantage to both health workers and

patients especially to address quality and timely lab results. Such timelines may play a role in the decrease of the disease prevalence. Generally, all information in both forms must be filled completely. Understanding that fully completing the forms is advantages to everyone's concern will spur the personnel to take responsibility for their work. At all, fully completing both forms have a greater advantage in the identification of when and where the gap happens and the responsible personnel for each work in the analysis of tests. Besides these completed formats have implications in easing communication between health professionals and patients, in identifying emergency cases and giving priority for those patients in need urgent attention. Furthermore, completed formats minimize the workload, ensures quality and timely results to the specified patient. In addition, reagent and supply usage is optimized as unrequested testing is avoided. All these help to decrease the prevalence of diseases due to mistreatment and to control the critical result by communicating easily with the physicians who treat that patient.

During this research, there were various obstacles' such as lack of time to collect the questioner and to analyze the research due to workload, lack of organized requests and report forms, most requests & lab report was not clearly written, request not written by the responsible physician, lack of continuous lab request & report forms, lack of co-relate lab requests & lab reports and the main obstacle was lack of studies on this title especially in Ethiopia to take literature review and to identify the gap and advantage of this study relatively with the previous study.

Finally, we recommend that:

- All responsible health professionals should understand the benefits and advantage of completing the various parameters in both formats.
- The responsible person should clearly and neatly complete both lab requests and report forms.
- Studies are done in different parts of our Country to cover the gap in practice to trigger intervention.
- All lab requests and lab report forms are stored in an organized manner.
- Studies on completeness of both lab requests and lab report forms are published.
- Lastly, all the personnel concerned with completing these forms take complete responsibility.

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